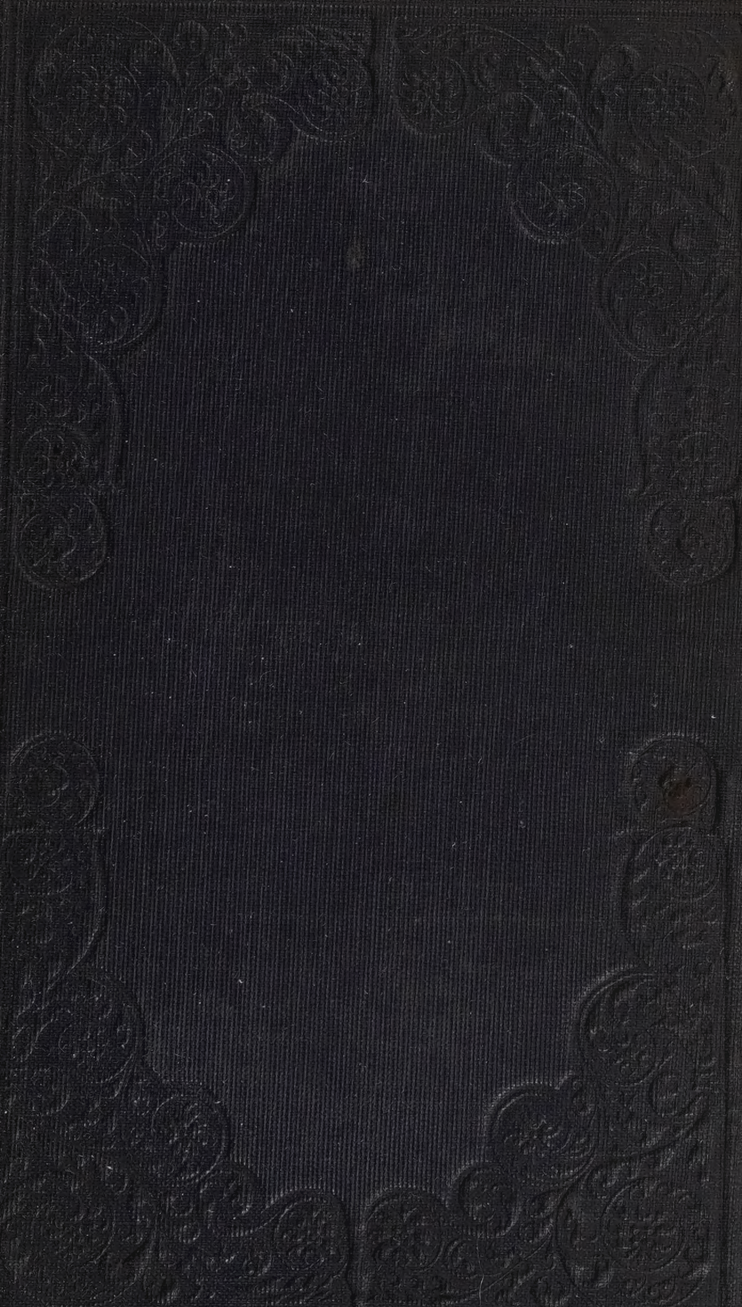

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BRAITHWAITE'S RETROSPECT.

VOL. XXVI. JULY—DECEMBER, 1852.

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THE

RETROSPECT OF MEDICINE:

BEING

A HALF-YEARLY JOURNAL,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND
PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE,

LECTURER ON OBSTETRIC MEDICINE AT THE LEEDS SCHOOL OF MEDICINE,
ETC.

VOL. XXVI. JULY—DECEMBER.
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[For the sake of our older readers, we have made a slight change in the present volume. We have placed the 'SYNOPSIS' at the beginning instead of at the end of the book, and have had it printed in a good legible type. We believe that this will be duly appreciated by them; for they will be able thus very easily to skim the cream off the bowl, and may then please themselves whether or not they take a drink of the milk underneath.]

PARK-SQUARE, LEEDS,
Dec., 1852.

A SYNOPSIS,

CONTAINING

A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOLLOWING PAGES; SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

Ague.—Apply a liniment along the spine, composed of ʒ j. of chloroform to ℥ iijss. of essential oil of turpentine. (M. Aran, p. 13).

Collapse.—In a case of collapse coming on in a boy three and a half years old, during an attack of measles, forty minims of turpentine, combined with two drachms of ipecacuanha wine, proved a most valuable diffusible stimulant. (Mr. C. W. Whitby, p. 425).

Fever, *Intermittent.*—Several cases of convalescents being attacked with intermittent fever, having occurred in the practice (hospital and private) of Dr. Dundas while in Bahia, the conviction on his mind became irresistible that they did not arise from a marsh poison, but sprung directly from imprudent or too early exposure to a strong current of cool sea air, loaded with moisture, while the system was under the debilitating influence of previous exhaustion or disease. (Dr. Dundas, *Edin. Med. and Surg. Journal, Oct.,* 1852, p. 319).

Hydrophobia.—In a case of this terrible affection, chloroform was administered with great relief to the restlessless, vomiting, and violence of the convulsions, though it had no effect in preventing the fatality of the case. (Dr. J. A. Lawrie, p. 17).

Inflammation, *Farcinomatous.*—In a case of this kind, attacking the left foot, attended by great constitutional prostration and sloughing of the part, five-grain doses of the sesquicarbonate of ammonia, administered every two hours, were followed by the most decided benefit. (Dr. Mackenzie, *Med. Times and Gazette*, July 3, 1852, p. 7).

Scarlatina.—Dr. Andrew Wood, physician to Heriot's Hospital, Edinburgh, recommends the production of diaphoresis. This is to be produced in the following manner, as ordinary diaphoretics fail:—Several common beer bottles, containing very hot water, are placed in long worsted stockings, or long narrow flannel bags, wrung out of hot water. These are to be laid alongside the body, but not in actual contact with the skin; one on each side, and one between the legs, will be generally found sufficient. Carbonate of ammonia seems to act most beneficially by supporting the powers of life, by assisting the development of the eruption, and by acting on the skin and kidneys. When carbonate of ammonia cannot be borne, brandy may be given. No depleting measures must be adopted, even purgatives must not be given during the first ten days, as tending to interfere with the development of the eruption. (Prof. Bennett, p. 7.)

Small-Pox.—In a case of small-pox, attended by great swelling of the throat and painful and difficult deglutition, great relief followed the application to the throat of jeweller's cotton, well sprinkled with powdered camphor. (Mr. H. George, p. 377.)

In two cases of small-pox, the application of a saturated solution of gutta percha in chloroform, applied over the pustules, prevented the disfigurement arising from pitting. It is of great importance to observe that the solution should not be applied until the pustules are fully maturated, or even begin to exhibit the first appearance of collapse. (Dr. Stokes, p. 374).

Variola.—In a case of confluent small-pox, the face was covered with mercurial ointment stiffened with starch. The face was free from any marks of the disease afterwards, presenting a marked difference to the other portions of the skin. (Prof. Bennett, p. 9).

AFFECTIONS OF THE NERVOUS SYSTEM.

Chorea.—The indications in this disease are to improve the state of the blood, amend general nutrition, calm the nervous system, and infuse tone into the muscular. If any irritation exists it must be removed. The most frequent source perhaps is from ascarides in the rectum, and these may be removed by an injection of a strong solution of salt in water, or an infusion of quassia into the rectum. The disease very frequently yields to attention to diet, and the cold affusion employed two or three times a day. Of the tonics, those of the metallic kind are the best, especially iron and zinc, or quinine may be employed, or some form of bark. Sometimes the muscles become slightly paralysed; the best remedy for this, is the careful employment of galvanism; a gentle and slowly interrupted current may be transmitted through the paralysed part from a quarter of an hour to twenty minutes at a time. Friction with a rough towel or a flesh brush may be also employed. (Dr R. B. Todd, p. 26).

Dr. Merei regards the ammonio-sulphate of copper as a sovereign remedy in chorea. Out of 177 cases treated at Pesth, 170 had been restored by this drug to perfect health in an average time of 22 days. The prescription he employs is the following:—Aq. menth. pip., ℥ iv.; ammonio-sulph. cupri, gr. viii.; tinct. opii, gtt. viii.—xii.; syr. simplicis, ℥ ss. A teaspoonful may be commenced with, four or six times a day, gradually increasing the dose. A child from nine to fourteen years old might take a tablespoonful four or five times a day. If sickness is produced, cease for a day, then recommence in smaller doses. If chlorosis or anæmia is conjoined with the disease, then add some preparation of iron. (Dr. Merei, p. 31).

The inhalation of chloroform in the ordinary manner on a pocket handkerchief in a case of chorea, under Sir Henry Marsh, was followed by the most marked relief in the symptoms. (Dr. Banks, p. 25).

Epilepsy.—Dr. E. Watson having studied Dr. Marshall Hall's theory of the relation of laryngismus to epileptic convulsions, adopted the following treatment. The patient was a young lady, who for several years had been afflicted with epilepsy. Dr. Watson applied a solution of nitrate of silver (℈j to the ℥j) to the glottis, daily, for a fortnight, and afterwards for some weeks with longer intervals between the applications. There can be no doubt but that the treatment gave marked relief, both in the frequency and intensity of the paroxysms. (Dr. E. Watson, p. 36).

Headache.—Give doses of half a grain to one grain, three times a day, of the sulphate of nickel. This remedy seems to have been a very valuable one in the hands of Dr. Simpson, of Edinburgh. It seems to be of use in those cases in which iron has been employed, especially in chlorosis and amenorrhœa. (*Monthly Journal of Med. Science, Aug.* 1852, *p.* 135).

Neuralgia, *Facial.*—Apply the following pomade over the affected nerve, renewing the application according to circumstances :—Pure chloroform 4 drachms; cyanide of potassium 3½ drachms; axunge 3 ounces; wax sufficient to give consistence. If the neuralgia is in the scalp, a piece of the ointment the size of a pigeon's egg is to be rubbed over the part, and the head is then to be covered with an oil-skin cap. (M. Cazenave, p. 38).

AFFECTIONS OF THE CIRCULATORY ORGANS.

Epistaxis.—The following plans may be tried :—1. Apply alcohol on dossils of charpie. 2. Blow into the nares equal parts of powdered gum and alum, or dossils rolled in this mixture may be applied, taking care to moisten them with warm water, before removing them. 3. Perhaps the best plan is previously to dry the nostrils and then pass into them dossils of pure clean cotton wool, until they are filled, not pressing it in too tightly, or allowing it to be too loose. (M. Reveille-Parise, p. 211).

Erectile Tumour.—In a case of a large erectile tumour in the neck, the following treatment was followed with complete success. The tumour was punctured at the centre, by means of Anel's syringe, and wine aromatized by aromatic herbs was injected. Considerable inflammation followed, but by cold applications and antiphlogistic treatment, it was subdued; and on the seventeenth day after the operation the tumour was no larger than a pea. (Prof. Riberi, p. 212).

Hemorrhage *from Wounds of the Palmar Arch.*—When an artery is divided in the palm, apply pressure as follows: Let each finger and the thumb be separately bandaged to the metacarpal bone, then, the finger of an assistant being still kept upon the divided vessel, apply compresses to the remaining space in the palm, reserving that over the bleeding vessel for special pressure. Press a small dossil of lint into the wound; over this a compress; over this another, and so on, until these are elevated over the surrounding integuments. Then let a roller be applied over the compresses, and carried as far as the elbow, placing a small compress over the radial and ulnar arteries to moderate, but not interrupt, the flow of blood. It is important that the palmar aponeurosis should be flexed so as to allow the pledget of lint to come in contact with the divided artery. The treatment by pressure to be successful should be applied early, and the bandaging be evenly employed over the entire limb, at the same time the arm must be kept constantly elevated. (Mr. R. G. H. Butcher, p. 207).

AFFECTIONS OF THE RESPIRATORY ORGANS.

Air Passages, *Topical Medication of.*—Dr. Horace Green states, that not only does he constantly pass a sponge containing a solution of nitrate of silver into the glottis, but frequently, by means of a probang nearly straight, he has passed it down to the division of the trachea, and *by turning it aside, even into the right or left bronchus, with as much ease or safety as the catheter is introduced into the bladder.* (Dr. H. Green. p. 61).

Instead of thrusting a piece of sponge into the larynx, in applying the solution of nitrate of silver, Dr. Cotton, by means of a pair of forceps made by Mr. Coxeter, squeezes the sponge saturated with the solution over the larynx, so that it passes into its interior. This plan is stated to be much less irritating than the one commonly employed. (Dr. Cotton, p. 75).

CROUP.—Place the child in a bed closed with a double curtain. Introduce into the bed a large earthenware pan nearly filled with all but boiling water. Into this occasionally submerge a heated brick, for the purpose of disengaging steam. By this means the atmosphere around the little patient will be kept at a temperature of from 75° to 80° Fahr. and surcharged with vapour. In addition to this part of the treatment, give an occasional emetic whenever the breathing seems impeded, not to produce the constitutional effect of the drug employed, but to facilitate mechanically the expulsion of the products of the inflammation. (Dr. W. Budd, p. 77).

In a case occurring in a child three years old, after leeches, calomel, salines, and ipecacuanha had been employed, chlorate of potass was administered apparently with the most marked benefit. (Mr. E. F. Sankey, p. 83).

GLOTTIS, *Œdematous.*—Apply a solution of nitrate of silver, where it arises from a sub-acutely inflamed mucous membrane. (Dr. E. Watson, p. 73).

HÆMOPTYSIS.—Dissolve a drachm of gallic acid in six ounces of hot water, and add rather more than a tablespoonful of brandy if the patient is faint. A dessertspoonful of the mixture may be given every three minutes until the bleeding has abated, and afterwards at less intervals. (Dr. W. Bayes, p. 50).

HOOPING COUGH.—Apply a solution of nitrate of silver, 20 grains to the ℥j. of water, to the larynx by means of a probang and sponge. Out of 125 cases of this disease so treated, 78 were speedily cured, 39 were greatly relieved and shortened, and 8 resisted the treatment altogether. (Dr. E. Watson, p. 71).

Dr. v. Brewning employs the following: ℞. Tannini, gr. 1-6th; acid. benzoic, ext. belladon., utrq., gr. 1-12th; pulv. rhei, gr. iij.; p. gumm. acac., gr. xij. M. fiat pulv. The powder may be given three or four times a day. For a very young child half the dose twice daily will be sufficient. (p. 76).

M. Joubert cauterizes the glottis in this disease. His experience is, that out of 68 cases 40 were rapidly cured, 21 markedly relieved, and in only 7 did the treatment fail. (p. 76).

Larynx, *Inflammation of.*—In the first stage of an inflammatory attack of the larynx or trachea, when the mucous membrane is dry, an emetic will restore the moisture. Cauterization should be used locally at the same time that the emetic treatment is adopted internally. In treating these inflammations by the application of the nitrate of silver, it is important to bear in mind that *the more intense the degree of inflammation of the lining of the larynx is, the weaker ought to be the solution of the nitrate applied to it.* The first effect of the application is to coagulate the albuminous film upon the surface of the membrane which had been stripped of its epithelium, and thus to cover and protect it. As the good effects of the application are worn off in a few hours, the touching of the larynx must be repeated frequently for some days, until all the symptoms of laryngitis have completely disappeared; as in most severe cases, especially in adults, a chronic thickening is liable to be left, it is a good precaution to give a little mercury towards the end of the acute attack. In true exudative croup, where the inflammation is of a much more intense and fibrinous character, and where it is almost of a purely local nature, seizing at once on the larynx or trachea, the treatment by the application of caustic is unsuitable, the symptoms being increased rather than diminished, by its use. (Dr. E. Watson, p. 65).

Pneumonia.—Apply flannels soaked in warm spirits of turpentine over the regions of the dulness, and keep them on for half an hour. Let these be applied three times a day for three or four days. Give the liq. ammon. acetatis as a diaphoretic, in doses of six drachms every three or four hours. An occasional dose of a mild aperient may be given, and the patient allowed a pint of beef tea, with a little milk and bread daily. (Dr. R. B. Todd, p. 50.)

Tracheotomy.—Dr. Gerson, of Hamburg, has invented an instrument which is similar to a three branched speculum in principle, for the purpose of opening the trachea without risk of hemorrhage. This instrument and the manner of using it, are described at page 440.

AFFECTIONS OF THE DIGESTIVE ORGANS.

Ascarides, *Lumbricoides.*—Use the following powder:—Pulv. sem. santonici, pulv. sem. tanaceti, utrq., ʒ ss.; pulv. rhei, gr. xij.; pulv. jalapæ, gr. viij.; sacch. alb., ℈iv. F. pulv. To be divided into six or twelve powders according to the age of the child. Give two to three powders every day. If the effect of the medicine is wished to be increased after it has been taken two or three days, add two or three grains of calomel to each dose, for three or four times.

Vermicularis.—Use injections of an infusion of red onion, mixed with half a grain of aloes. (Dr. Merei, p. 102).

Diarrhœa.—Give matico in doses of from eighteen grains to ʒj. per diem. (M. Modonini, p. 99).

Dyspepsia.—As much of the following compound, properly diluted, as will not affect the taste of the food disagreeably, may be taken along with each meal:—Solution of potash, chloride of sodium, of each one ounce; phosphate of soda, a drachm and a half; water, three ounces. (Mr. J. Spurgin, p. 91).

Fistula in ano.—Make a paste of chloride of zinc, with flour and water, and this being entangled in a grooved probe, pass it up to the opening in the rectum. The point of a second probe or instrument is then to be placed in the groove and passed just sufficiently high, that by being retained in that position while the armed probe is withdrawn, the groove may be cleansed of the paste. This may be repeated every second or third day. (Mr. E. Lacy, p. 245).

Hare-Lip.—In a complicated case of this kind, after the operation, Mr. Quain derived the most essential assistance from the supporting spring, which has lately come into use. This encircles the head from behind, and the two ends, furnished each with a pad, rest upon the cheeks, which are thereby supported in the position given them. All dragging or pressure upon the sutures is thus prevented. (Mr. R. Quain, p. 214).

Hernia.—M. Malgaigne having recently formed the idea of converting irreducible into reducible hernia, Mr. Cooper recites a case which occurred so far back as 1837, to prove his having previously employed this plan. In that case, in a lad seventeen years old, Mr. Cooper kept the abdominal muscles constantly relaxed, and frequently applied ice to the tumour. He was also kept on low diet, and the bowels moderately opened. On the 19th day of this treatment, the hernia was easily reduced, and to his knowledge has never descended since. In another case, a patient was kept under this plan of treatment for fifteen days, with the like success. When it is supposed the hernial sac contains omentum, Mr. Cooper recommends small doses of blue pill and tartarized antimony in addition to the foregoing plan. (Mr. B. B. Cooper, p. 224).

Strangulated.—In a case of strangulated femoral hernia in a female, Mr. Fergusson did not make the Y shaped incision as is usual over the tumour, but he made a straight cut, about one and a half inches long, over the inner side of the hernial tumour, almost directly over Gimbernat's ligament, which he wished to touch. He did not care whether he saw the sac or not, but sought for the ligament, and having divided it, with a little pressure the contents of the sac receded. For this simple plan, the profession is indebted to Mr. Gay, of the

Royal Free Hospital. There is often more danger incurred by the taxis than by the operation, because we do not know what pressure the parts will bear without serious injury. Faith should not be put in opium; it is an excellent remedy in certain instances, but these are rare compared to those in which it can be of no essential service. (Prof. Fergusson, p. 220).

Intestinal Obstruction.—In a case in which the ascending colon was opened, Mr. Hilton operated as follows. He made a vertical incision two inches long in the outer edge of the quadratus lumborum muscle, between the last rib and the crest of the ilium, extending nearer to the ilium than the rib. The transversalis muscle was then divided vertically to the extent of two inches, parrallel to the outer edge of the quadratus lumborum, and after a portion of fat had been removed and separated by means of a blunt director, and an artery had been tied, the intestine was clearly brought into view, of a greyish pink hue and somewhat bulging. By pressing upon the anterior wall of the abdomen the bulging of the intestine became more prominent. A long curved needle armed with silk was now passed through the intestine, and then through the integuments at the point nearest the anterior edge of the wound, so as to fix the intestine anteriorly, and in a similar manner the part nearest to the posterior edge was likewise fixed. A vertical incision was then made, about an inch in length, into the intestine between the transfixed points above alluded to. (Mr. J. Hilton, p. 232).

Jaundice.—In jaundice from suppressed secretion of the liver, give from ʒ ss. to ʒ j. of sulphate of magnesia, with xv. grains of carb. of magnesia, and ʒ ss. of aromatic spirit of ammonia, three times a day. (Dr. G. Budd, p. 109).

Rectum, *Irritable.*—In a case of this disease attended with constipation, in which repeated glysters and large doses of castor oil had failed in giving any relief, perfect success followed the administration of five grains of pil. saponis c. opio, given three times a day;

with ʒ ij. of castor oil on alternate mornings. The opium did not in any way interfere with the powers of digestion. (Dr. G. H. Barlow, p. 247).

Ulceration and Excoriation of.—Keep the bowels free by the management of diet after the confection of senna has been used. Touch the small surface of ulceration with the point of a piece of sulphate of copper morning and evening, and after the bowels have been opened apply hot water with a sponge for a few minutes, and then an ointment consisting of hyd. c. cretâ and ceratum cetacei ʒ ss. to ℥ j. (p. 235.)

Place the forefinger of the left hand upon the sore, and with a probe-pointed bistoury fairly divide the ulcer longitudinally by passing through it into the subjacent tissue. If the ulcer is extensive, or complicated with other diseases, some addition is necessary to the treatment by simple incision according to the complication. Sir B. Brodie and Mr. Copeland agree in the above method of treatment. (Mr. R. Quain, p. 242.)

SARCINA VENTRICULI.—In a case of this disease attended by frequent and most violent acid vomiting, after alkalies, hydrocyanic acid, creosote, nitrate of silver, and opium, had been tried, without permanent effect, ℥ ss. of the concentrated essence of calumba, prepared by Messrs. Gale, Baker, and Co., to the ℥ viij. of water, and given every two or three hours during the attack, gave the most decided relief. (Mr. T. E. Amyot, p. 99).

TONGUE, *Tumours of.*—For the removal of these tumours, the surgeon has choice of three methods. Amputation by the knife gets rid of the mass at once; strangulation by means of ligature prevents any loss of blood; and excision performed carefully by a wire heated by galvanism accomplishes both these objects at the same time. (Mr. Erichsen, *Med. Times and Gazette,* Oct. 16, 1852, p. 389.)

THROAT, *Erysipelatous Affection of.*—Dr. Todd has related several cases of this affection, which is characterised on its first approach by symptoms somewhat resembling locked jaw; in one case, the patient was not able to open his mouth by the most violent effort. Then follows great difficulty of swallowing any fluids, even a little water. The best treatment seems to be, the application of the solid nitrate of silver to the fauces, and enemata of strong beef tea, with ten grains of quinine in each, to be administered every four hours. (Dr. R. B. Todd, p. 85).

AFFECTIONS OF THE URINARY ORGANS.

Bladder, *Paralysis of.*—Never evacuate the whole of the urine from an over-distended bladder at once. Patients sometimes die from severe depression owing to its sudden removal. Cathartics are valuable in this disease, especially turpentine and castor oil, along with calomel. Emetics must not be neglected. Of nervous remedies, strychnine, cantharides, and arnica, are the most important. They may be given in the following formula: Strychnine 1-16th of a grain, cantharides 1-8th of a grain, and arnica three to five grains, three times in the twenty-four hours. Counter-irritation, such as a succession of blisters over the dorso-lumbar region, is useful in almost all but the inflammatory form of vesical paralysis. The actual cautery is also a proper remedy. (Prof. Gross, p. 129).

In a case of this affection from over-distention, the patient, a female, was ordered to be electro-galvanised three times a week, and to take ten minims of the tincture of the sesquichloride of iron, three times a day, in infusion of quassia. The catheter to be used twice a day. In a fortnight the patient was able to pass the urine voluntarily, and in a few days more was completely recovered. (Dr. Lever, *Guy's Hospital Reports*, Vol. VIII, p. 42).

Puncture of, through the Rectum.—Pass the index-finger of the left hand into the rectum until the prostate gland is felt; the finger must be pushed, if possible, behind this part; seek now for fluctuation, which, however, is not always easy to find. The anterior part of the bladder having been pressed upon, and the posterior part of the prostate gland recognised, glide the instrument along the palmar surface of the left index-finger until it is in contact with the distended bladder resting upon the rectum—take out the director—introduce the trocar—and push it upwards and forwards one or two inches into the bladder. The greatest care should be taken that the prostate gland be not transfixed; it might be a fatal mistake. (Mr. J. Hilton, p. 275).

After puncturing the bladder through the rectum, the patient should be kept in bed at least three weeks after the sinuses are securely cicatrized, as from its weak and feeble organization, the newly-formed cicatrix is liable to give way. (Mr. J. Hilton, *Lancet, Nov.* 13, 1852, *p.* 435).

Puncture of, through the Symphysis Pubis.—Dr. Brander recommends puncturing the bladder through the symphysis pubis. He performed the operation first on the dead subject, and then carefully dissected the parts and found that in all respects it had been a successful one. The operation has now been performed several times with complete success. He employs a flattened trocar. (Mr. H. T. Chapman, p. 323).

Neuralgia of.—To subdue the intensity of the disease employ a systematic course of purgation. This treatment is valuable also in neuralgic affections of other parts of the body, accompanied by inflammatory symptoms. Then carbonate of iron may be employed; but if arising from malarious influence, quinine and arsenic are to be preferred; gr. iv. of quinine may be taken every three hours until 15 or 20 grains have been taken. To eradicate both vesical and other forms of neuralgia, employ the following:—Acid. arseniosi, gr. ij.; strychninæ, gr. j.; ext. aconiti, gr. viij.; pulv. opii, gr. v. M. These ingredients are to be carefully incorporated and divided into 16 pills of equal size, of which one may be given every six hours, or four in the 24 hours. When nausea begins, the pills must be given less frequently, or $\frac{1}{2}$ or $\frac{2}{3}$ of a pill may be employed at a time. The exhibition of the pills also should not be continued longer than a week or ten days at a time, to allow the stomach a short recess, when they may be again resumed. (Prof. Gross, p. 127.)

Corpus Spongiosum, *Inflammation of.*—The following symptoms were produced by the frequent passage if too large sounds along the urethra, in a case of calculus in the bladder: excessive hardness of the corpus spongiosum, tenderness on pressure, pretty constant discharge of mucus from the urethra, frequent desire to pass urine, great expulsatory efforts being required to ensure even its slowly draining from the penis, and apparently almost obliteration of the canal, notwithstanding the size of the instruments forced along its passage. Mercurial and iodine ointment were prescribed, to be rubbed along the perineum and whole course of the urethra, and the patient put under mercury constitutionally. The dilatation of the urethra was recommenced gradually, always keeping within No. 8. (Mr. J. Hilton, p. 268).

Hydrocele.—Mr. B. B. Cooper does not agree in the opinion, that diffused and encysted hydrocele are the same disease, with the exception that in the latter the fluid is merely contained in an adventitious sac. He thinks diffused hydrocele to be merely an anasarcous collection of fluid, the same as other œdematous effusions; and encysted to be always more or less connected with the tubuli seminiferi of the testicle, or epididymis, or vas deferens of the chord. He is led to this opinion from spermatozoa being always found in the fluid. (p. 338).

Congenital.—The treatment, it is evident, in congenital is different to what it is in ordinary hydrocele. The best plan is to draw off the fluid and then to apply pressure upon the external abdominal ring, to cause adhesion between the walls of the canal through which the tunica vaginalis communicates with the abdomen. If this can be effected it is then resolved into common hydrocele, and treated by injection, but not until. The French surgeons perform the operation of injecting even in congenital hydrocele, with the precaution of pressing firmly upon the abdominal ring, to prevent the irritating fluid passing into the abdomen; but this must be a dangerous proceeding, as it is no preventive to the inflammation extending to the peritoneum lining the abdomen. In children, the treatment of congenital hydrocele is to press the fluid back into the abdomen, and then apply slight pressure upon the external abdominal ring: when the communication is cut off between the abdomen and the scrotum, the fluid in the latter will be readily absorbed; this plan is generally effectual up to puberty. (Mr. B. B. Cooper, p. 332).

LITHOTRITY.—After the operation of lithotrity, it sometimes happens that a fragment of the stone becomes impacted in the membranous part of the urethra. To ascertain the nature and seat of the fragment pass a soft bougie down the urethra, the fragment seldom fails to leave a mark on the bougie, whereas a metal sound would pass over it and communicate no impression. Where impaction is to be apprehended, the patient should not be allowed to make water while on his knees, but must endeavour to do so while on his back. Immediately after the operation several injections of warm water should be thrown into the bladder by means of a large catheter, with large eyes, for the purpose of removing as much of the detritus as possible. If a fragment should be impacted, and if it should be near the neck of the bladder, it may be gently pushed back, but in all cases, if there is any resistance, injections of warm water should be used through the catheter. If it is impossible by these means to push back the fragment, there is only the choice between extraction and crushing, and whenever the former can be effected without much difficulty it is to be preferred. (Mr. W. Coulson, p. 295).

LITHOTOMY AND LITHOTRITY.—[The indications, comparative advantages, and relative applicability of lithotomy and lithotrity are considered at length by Mr. Coulson in article 98. See p. 283–316.]

PROSTATE, *Enlarged.*—M. Vanoye recommends the administration of sal ammoniac in large doses, commencing with 15 grains every two hours; we may double or treble this quantity, so that ℥ ss. is taken per diem. Mucilaginous vehicles, bitter extracts or aromatics, and a good animal diet, should be employed at the same time. This plan should not be followed in hemorrhagic dispositions, or in affections due to poverty of the blood. (M. Vanoye, p. 131).

Stricture of the Urethra.—Mr. Moore proposes to treat this condition by dilatation. He first passes down the urethra a thin expansible tube, and when this has passed through the stricture, he introduces a wire stilet, after this one larger and so on, until gradually, perfect dilatation is effected. A command of the passage may be obtained by allowing the flexible tube to remain some time in the urethra, which may be done for days together, without any risk of suppuration or irritation taking place. (Mr. W. J. Moore, p. 270).

[Professor Syme's remarks on this subject are given at p. 249.

For Mr. Coulson's views of Professor Syme's operation, see p. 251.]

Traumatic Stricture.—Mr. Coulson asks the question, where great damage has been done to the urethra from injury, whether it would not be better to contrive some artificial outlet for the renal secretion, than to make repeated attempts to rectify the state of the natural canal when they are not likely to be attended by success. He thinks rather than risk repeated attacks of retention, the best plan would be to make an opening into the bladder above the pubis, or through the rectum, and by allowing the urethra perfect rest for a few days, favour its return to a normal state, and then, if after several weeks' rest, the urethra is found so mutilated as not to be amenable to the treatment by dilatation, to make such temporary opening permanent. (Mr. W. Coulson, p. 271).

Vesico-Vaginal Fistula.—[A long article on this subject by Dr. J. M. Sims, of Montgomery, Ala, U.S., detailing his peculiar method of operation, with engravings of the mechanical contrivances which he employs, will be found at p. 341–360.]

AFFECTIONS OF THE SKIN, &c.

Acne *of the Face.*—Apply a saturated solution of gutta percha in chloroform over the spots, enjoining the patient not to rub off the pellicle by washing. (Dr. R. J. Graves, p. 373).

Boils.—To an adult afflicted with this painful furunculoid eruption, give a table-spoonful of yeast with some water, three times a day. Smaller doses may be given for children. (Mr. J. E. Mosse, p. 382).

Cicatrices from Burns.—Professor Fergusson in operating upon cicatrices after burns, after dividing the bands and dissecting them back, employs extension of the parts. In a case of the kind lately under his care, this mode of treating this unpleasant deformity was attended with complete success. (Prof. Fergusson, p. 382).

Impetigo.—Apply the saturated solution of gutta percha in chloroform, by means of a camel's-hair pencil, over the patches daily. (Dr. R. J. Graves, p. 373).

Lepra Vulgaris.—Use an alkaline bath once a week, and thin oatmeal gruel instead of soap. Give half-grain doses of iodide of potassium, and three minims of Fowler's solution three times a day, and apply night and morning, an ointment composed of the nitric oxide of mercury and lard, with a few drops of creosote added. (Mr. J. S. Tylor, p. 369).

Lupus Exedens.—Apply a solution of nitrate of mercury in concentrated nitric acid with a glass brush over the whole diseased surface, including all the surrounding tubercles, and over this paint a thin coating of prepared collodion. The above solution is prepared by dissolving one ounce of mercury in two ounces of pure nitric acid. A teaspoonful of cod liver oil may be taken three times a day; and a pill every night containing one grain of calomel, with one-third of a grain of opium. (Mr. J. Startin, p. 379).

Nævus.—Mr. Startin advocates a plan of treating this morbid condition, which he terms "elastic strangulation." It is effected by environing the tumour with a ligature passed by means of a long round needle beneath the skin, so as to include the morbid parts in a triangular space, which shall extend a line or so beyond the boundaries of the nævus, care being taken that both ends of the thread (made of strong boot-closer's twist) have their exit at that apex of the triangle which is most conveniently situated, to allow an elastic band, half an inch wide, and two or three inches long, made of No. 16 vulcanized india-rubber sheeting, to be fastened upon them, so as to permit the necessary tension to be made upon the band, and through it upon the subcutaneous thread surrounding the nævus. (Mr. J. Startin, p. 375.)

ONYCHIA.—The late Mr. Colles, of Dublin, in a paper on some morbid affections of the great toe nail, divides them into three kinds: 1. The common onychia, or nail growing into the flesh, on its external edge. 2. The inner angle of the nail, resting on a hard white mass of laminated horny cuticle, which may be picked out in bran-like scales, exposing a small cup-shaped cavity, without ulceration. 3. Onychia maligna depending on a morbid condition of the secreting matrix of the nail. In the first disease, only so much of the nail as is separated from the matrix, and imbedded in the fungus, is to be removed. This is done by pressing on the fungus with a spatula, raising the nail from it by a pair of strong forceps, and then by means of curved scissors passed underneath it, cutting it completely out. In the second it is to pick away the laminated scales and remove the bulbous end of the nail. In the third, the treatment is to keep the patient in bed, poultice the part for two or three days, then cleanse the ulcer thoroughly by means of a syringe and a stream of tepid water, and afterwards cutting away as much of the loose nail as can be done without irritating the surrounding sensitive surface. Lastly, fumigate, night and morning by a means of a funnel, with the mercurial candle, which contains ʒj. hyd. sulph. rubrum to ℥ij. of wax. After each fumigation, the toe to be enveloped in a piece of lint spread with spermaceti ointment. (Mr. W. Tagert, p. 430).

Foment the toe well with hot water, twice daily, for two or three days, then apply the nitrate of silver over the ulcerated surface, as well as underneath and over the nail. The advantage of applying it over the nail is, that its horny texture becomes so softened that it can be cut, if necessary, as easily as brown paper. The object of the application is not to procure excoriation, but a dry coating; therefore, the toe must be left exposed for half an hour after its application, and the fomentation is to be omitted for two days. The only other part of the treatment is to envelope the toe in a piece of dry lint. (p. 431).

Apply a blister to the root and sides of the nail. (Dr. Kirk, p. 432).

This disease is produced either by careless cutting of the nail or by wearing tight shoes,—the first must be avoided and the second corrected. After removing the sharp angle of nail which is often found imbedded in the fungous growth, the nail must be trained so that its angles over-lap the skin on each side, and be sufficiently long to support the soft parts at the extremity of the toe. (p. 430).

Apply a safe and powerful escharotic, as the Vienna paste, to the fleshy fungous at the side of the nail. By the establishment of suppuration, the attachments of the nail become loosened, and the nail may be easily removed. (Dr. Moriarty, p. 428).

Insert, as deeply as possible, calcined alum between the flesh and the nail, by means of a flattened stilet. Remove the crust which is formed, at first twice a day, and then once a day. If the crust is left, the purulent matter does not escape, and the disease persists indefinitely. The remedy must not be discontinued until the desication is complete, otherwise the disease renews itself. Moisture is eminently injurious, therefore poultices and foot-baths must be abstained from. (M. Somme, *Med. Times and Gazette, Oct.* 16, 1852, *p.* 396).

Treat the parts with well adjusted pressure and escharotics. First apply the nitrate of silver, then a coating of the nitric oxide of mercury, then cut a piece of cork the size and shape of the nail, the concavity answering to its convexity, and bind it on firmly with adhesive plaster, taking care to press it upon the ulceration. Pain is experienced at the first dressing, but soon vanishes. It will not require to be dressed again for two, three, or four days. By this treatment, therefore, instead of the nail being removed out of the way of the flesh, the flesh is removed out of the way of the nail. (Mr. Lacy, p. 432).

Psoriasis.—Apply a saturated solution of gutta-percha in chloroform; no woollen stockings or rough garment of any kind should be allowed next the skin, lest the application should be disturbed. (Dr. R. J. Graves, p. 375.)

AFFECTIONS OF THE BONES, JOINTS, &c.

Amputations.—[A valuable series of observations on this subject by G. J. Guthrie, Esq., will be found at p. 173 extending to p. 203, which it would be impossible to condense in this synopsis.]

Amputation *at the Ankle.*—Professor Syme states his having performed this operation above fifty times with complete success, the essential point of success being, his preserving entire the nourishment of the flap. As this can only be effected by the anastomosing branches of the integuments, the greatest possible care should be taken not to divide them. To the neglect of this caution Mr. Syme attributes the want of success which has attended some of the London surgeons in performing this operation. (Prof. Syme, p. 203).

Above the Knee.—In making the flaps in this operation, Mr. Luke makes the posterior flap by *piercing* and cutting from within outwards; but the anterior flap is made in the opposite manner, by carrying the knife in a curved direction antero-posteriorly through skin and muscle down to the bone. The flaps can be thus made with the greatest regularity exactly to the size best calculated to make a good stump, forming a thick, symmetrical, and clean cushion for the bone. (Mr. J. Avery, p. 205).

Bursal Tumours.—In a case of enlarged bursa over the wrist joint, after the usual vesicant and stimulating applications had been employed with no good effect, Mr. Stanley made a free incision into the swelling, the glairy fluid was evacuated, tents of lint were introduced into the wound, and the whole hand enveloped in a poultice. In the common *enlarged bursa patellæ*, perhaps the best plan is to draw off the contained fluid by means of a small trocar, then apply a small blister or a strong solution of iodine, and ultimately support the part with a mercurial plaster and bandage. The practice, by means of setons, of converting these enlargements into acute abscesses, very often produces disagreeable consequences, and it would appear that recently formed cases are especially ill adapted for this mode of treatment. The most suitable are, perhaps, the very chronic ones which have resisted ordinary measures. In all cases of enlarged bursa where the knife is resorted to, it is important to remember that the incision can scarcely be too free. (Mr. E. Stanley, p. 144).

Enlarged Superficial.—Make a free incision into the bursal tumour and let out the contents, and then apply a strong solution of iodine by means of a camel's-hair pencil to the interior of the sac. Insert a strip of lint into the wound, and keep it there, so that inflammation and suppuration may ensue and the cavity be obliterated. (Mr. H. Smith, p. 146).

Dislocation *of the Thumb Backwards.*—First make traction by means of Charriere's forceps in the direction of the axis of the first metarcarpal bone. When the posterior portion of the phalanx is brought to the level of the metacarpal surface, by imparting a rotatory movement inwards, and then employing flexion, reduction is easily accomplished. The inward rotatory movement disengages the metacarpus from the external band of muscles that surround it, and enables them to slide in front of its head. (M. Demarquay, p. 147).

Fractures.—[The remarks of Mr. G. J. Guthrie on the treatment of compound fractures are given at p. 157.]

Fracture, *Ununited.*—Several cases which were treated by polished ivory pegs being driven into the extremities of the fragments of the bones, and in which perfect bony union was obtained, are recorded in article No. 66, p. 150.

Ganglion.—Pass a small needle armed with a single thread of silk through the tumour, and leave it there for a few days until suppuration is established. The limb should not be exercised lest too violent inflammation be established. When suppuration occurs, a poultice should be applied. (Mr. H. Smith, p. 147).

VENEREAL AFFECTIONS.

Bougies, *Aluminized.*—In stricture, combined with chronic inflammation, these bougies are of great value in procuring *dégorgement* of the mucous membrane. This is effected generally in from seven to twelve days, when the dilatation of the stricture is then proceeded with. They are prepared by warming the end of wax bougies, and then incorporating with them some powdered alum, so as to form a kind of magma of the wax and alum. (M. Jobert, p. 368).

Gonorrhœa.—Let a mixture of half chloroform and half mucilage be injected into the urethra three times a day. If this should be too painful let it be diluted by adding more mucilage. (Mr. H. Behrend, p. 363).

[The above treatment is strongly objected to by Mr. F. I. Keene, see p. 364.]

Mr. Lloyd, of St. Bartholomew's, and Mr. Poland, of Guy's hospital, have treated several cases of gonorrhœa by M. Jozeau's Copahine-Mège, (or saccharated capsules of copaiba), an account of which will be found at p. 366.

Syphilis.—A comparison of the *simple* treatment of of syphilis with the *mercurial* treatment, is given by Professor Bennett, with statistics to prove the great superiority of the former plan, at p. 360.

AFFECTIONS OF THE EYE.

CATARACT, *Congenital.*—The best time for the operation in these cases is between the second and fourth month; it should not be delayed beyond the fourth or fifth month, as the eyes speedily acquire that restless seeking after light, which is characteristic of such cases, and which greatly interferes with the operation. Sir Charles Bell says that belladonna is of no use, as it may endanger the falling forward of the lens, which might produce severe irritation by coming in contact with the iris. Mr. White Cooper states, however, that it is of decided use, as it does not endanger the iris from this cause, and that if the needle be properly used, there need be little fear of this accident, but that if from any unforeseen circumstance it should occur, it is far better that the mass should not be bulged against the iris, which is prevented by its dilatation being effected by means of the belladonna. (Mr. W. W. Cooper, p 384).

OPAQUE CAPSULES, *to remove from the Eye.*—Instead of using one cataract needle for the purpose of dividing and removing the false membrane, and which commonly stretches and injures the neighbouring structures, Mr. Bowman has effected this object by a very simple method. He introduces two needles through different points in the cornea, down to the band of membrane; one acts as a fixed point, while with the other the membrane is torn across, and the fragments carried to opposite sides of the pupil, thereby avoiding the laceration produced by the ordinary operation. (Mr. W. Bowman, p. 383).

NITRATE OF SILVER, *mode of applying to the Eye.*—When a solution of nitrate of silver is applied to the eye, it should not simply be dropped into one angle, but the lid should be separated from the eyeball, and the solution dropped between them; in this way it becomes diffused over its surface. In the same way any ointment which is intended to be applied to the conjunctiva, must be inserted in requisite quantity under the upper lid. It is only in inflammation of the conjunctiva, or in superficial inflammation of the cornea, that these stimulating applications are necessary, and if the disease in either case does not soon yield to these topical applications, more ill than good is likely to result from their persistence, and some modification of the treatment must be adopted, suggested by the circumstances of the case. (Dr. W. Jones, p. 398).

MIDWIFERY AND THE DISEASES OF WOMEN.

Ovarian Dropsy.—Before any operation is resorted to in this disease, it is essential that the patient should be in a tolerably healthy condition. Before concluding on the treatment, we should first decide whether the sac is of an uni- or multilocular character, the presence or absence of adhesion, and in some degree the nature of its contents, density, &c. Our diagnosis will be much more secure by puncturing the cyst and examining the fluid; this is generally requisite where pressure and tapping have failed. This incision will be best made in the semilunar cartilage, and may be two or three inches in length. If, by this incision it is found that the sac is simple and not adherent, then we may tap again, and endeavour to withdraw the entire sac, or empty the sac, and then cut a piece out of it and return it. If the sac is multilocular and not adherent, we have still ovariotomy as a dernier resort. If the sac is adherent, then we may make an 'artificial induct,' that is we may make a fistulous opening into the sac, through which it may constantly discharge itself, and finally slough away. Where the sac is of great hardness and density, the idea of operating may be laid aside, for no good can come of it. The most favourable fluid content of ovarian sacs is where it is limpid, pale, or straw-coloured, containing very little albumen. Where albumen is in great abundance, our treatment must be rather palliative; and pressure after tapping is the most effectual palliative in such cases, retarding, as it will even in them, the fatal progress of the malady. (Mr. I. B. Brown. *Lancet, July* 31, 1852, p. 98).

Mr. I. B. Brown's new operation for treating ovarian dropsy, consists of excising a portion of the sac, returning the remaining portion into the peritoneal cavity, and closing the wound by sutures, allowing any fresh portion of the fluid secreted by the remainder of the cyst to escape into the peritoneal cavity, and to be there taken up by absorption, and discharged by the kidneys. This plan was brought to Mr. Brown's mind by reflecting upon the numerous cases in which a spontaneous cure followed an accidental rupture of the cyst, succeeded by a copious discharge of urine. Mr. Brown relates three cases thus treated, which, though followed by severe peritonitis, ultimately did well. (*Lancet, June* 5, 1852, *p.* 544).

Instead of tapping for this disease in the sitting posture, let the patient be placed in the horizontal position. If it can be ascertained which is the ovary diseased, the patient must be laid on the left or on the right side accordingly, the distended ovarian sac projecting, if possible, over the edge of the bed. (Dr. Simpson, *Monthly Journal, Oct.* 1852, *p.* 361.)

INVERSION OF THE UTERUS.—The reduction of a chronic case of inversion of the uterus under the influence of chloroform, is recorded in the 'Med. Times and Gazette,' by Dr. Merriman, which is taken from the 'Archives Générales de Médicine' for May, 1852. It occurred in the 'Hotel Dieu,' of Lyons, under the care of M. Barrier, Surgeon in chief to the Hospital. (Dr. S. W. J. Merriman, p. 409).

POLYPUS UTERI, *Intra-Uterine.*—When the womb remains large and bulky after delivery, and when we are satisfied there is not another ovum, although we may suspect the presence of a polypus, we are decidedly not justified, so long as no alarming symptoms occur, in endeavouring to make out exactly by manual interference, whether such is the case or not, or in arousing the uterus to contraction by the exhibition of the ergot of rye. The system of non-interference must be pursued; the safety of the patient consists in the quiescence of the uterus. To insure this, strict rest, mild sedatives, and the avoidance of all local irritation should be enforced. But, if, in spite of all endeavours, it be necessary to remove the polypus, the best plan is, if the pedicle is small to twist it off. If, however, it occur at a time when physical injury to the uterus may be hazardous, the ligature should be applied to the pedicle to prevent hemorrhage, and then the body of the polypus removed with the knife. (Dr. Oldham, p. 413).

MISCELLANEA.

CATHARTIC.—Give two grains of calomel with ten or twenty grains of bicarbonate of soda. After the bowels and liver have been well acted upon, the medicine loses its power and should be discontinued. The soda seems to exert some influence in preventing the mercury acting upon the gums. (Dr. Hunt, p. 425).

CHLOROFORM.—Mr. Le Gros Clarke, assuming that sensation and volition are simultaneously suspended, gives his patient to understand, that when he ceases (after being commanded to do so) to make some voluntary effort, such as squeezing the hand of an assistant or raising his hand, the operation will be commenced. This he thinks is the best plan of affording a sure and simple criterion of what is a sufficient dose of the anæsthetic. (p. 424).

Local application of.—When applied to any painful part, the phial containing it should be inverted upon a handkerchief, so as to wet a spot upon its centre. Having done this two or three times, it should be applied to the seat of pain, with moderate pressure, and without friction. Some redness and tingling in the part are produced, but these soon disappear when the handkerchief is removed. To prevent evaporation or inspiration of the chloroform, the cloth should always be covered with another dry one. (Dr. Channing, p. 423).

Resuscitation from.—In a case of great danger from the inhalation of chloroform, after all other remedies had failed, galvanic shocks were passed over the chest and top of the spine, at the origin and insertion of the phrenic nerves, and continued during two or three minutes. This produced the happiest results. The tendency to relapse into insensibility after the use of galvanism, was prevented by dashing cold water occasionally in the face, together with the internal administration of the same fluid. (Mr. J. Hilton, p. 204).

Dr. John Snow is of opinion, that if artificial respiration were put in force within half a minute after the breathing had ceased from the effects of chloroform, the patient would, in many cases, be restored. *(London Journal of Medicine, June* 1852, *p.* 568.*)*

Cod Liver Oil, *mode of taking.*—Let it be taken in a simple weak infusion of quassia. This would seem the more valuable as it is itself a mild and agreeable tonic bitter, assisting in improving the tone of the general system. (Mr. G. S. Morris, p. 427).

Manganese.—Manganese seems to be of similar value to iron in those diseases characterized by that condition of the system termed anæmia. Ferro-manganese salts are now obtainable in Paris, the only drawback being their high price. (M. M. Petrequin and Burin, p. 426).

Iodine.—Instead of applying iodine by means of friction, in the form of ointment to the neck in the case of goitre, M. Hannon recommends it to be tied over the part, between two layers of cotton wool in a bag. To prevent it staining the linen, a small piece of gummed silk may be placed over the bag. *(Med. Times and Gazette, Sept.* 4, 1852, p. 242).

Leeches, *mode of applying.*—Place the leeches on the skin and slightly exhaust the air around them by means of a cupping glass placed over them, after the air is rarefied in it in the ordinary manner. (Dr. C. F. Sloan, p. 427).

Styptic, (M. Pagliari's).—This styptic liquor, which seems to have abundant testimony in its favour, is composed as follows:—Eight ounces of tincture of benzoin, one pound of alum, and ten pounds of water, are boiled together for six hours in a glazed earthen vessel, the vaporized water being constantly replaced by hot water, so as not to interrupt the ebullition. The resinous mass is to be kept stirred round. (*Med.-Chir. Review*, *Oct.*, 1852, p. 557).

Poisoning *by Laudanum.* — To evacuate the stomach speedily and effectually, introduce into it a quantity of carbonate of soda, followed by vinegar. The effervescence is so powerful that all the contents of the viscus are discharged. If emetics have before been taken ineffectually, they begin now to act. (Dr. E. Buck, *American Journal of Med. Sciences, Jan.*, 1852, p. 117).

By Strychnine.—In a case of poisonous symptoms being induced from an over-dose of strychnine given in mistake, the following prescription gave immediate relief: 24 grains of camphor were dissolved in six ounces of almond mixture, one-fourth to be taken every two hours. (Dr. Pidduck, *Lancet, July* 24, 1852, p. 80).

Lead Poisoning.—In addition to the acid. sulph. aromat., mercury is exceedingly valuable in controlling the effects of, or removing this and other latent poisons from the body. (Dr. Fenner, *Med-Chir. Review, Oct.*, 1852, p.345).

From Snake-Bite.—The late M. Lisfranc spoke in the most unqualified manner of the success following the free application of ammonia to the wound, and its free administration internally. (Dr. R. Barnes, p. 438).

From Bite of the Cobra de Capello.—Dr. Cole, H.E.I.C.S., adds his testimony to the great value of ammonia administered internally in cases of bite from this snake. He prefers the liq. ammon. fort., (P. L.) in doses of ten to twenty drops. He also states his belief that it is exceedingly dangerous to suck the poison from the wound, as, in his opinion, the deleterious principle of the poison is not neutralized by the gastric juice. (p.436).

Give a teaspoonful of sp. ammoniæ aromaticus in a little water every five minutes. Dr. Mac Rae when bitten by this snake, took 13 teaspoonfuls in this manner, every dose seemed to give some relief. In three hours he was out of danger. (Mr. E. Hickman, p. 438).

It is now acknowledged that suction from the wound, or the actual cautery, or, if possible, a tight ligature, combined with every means to combat torpor, ought to form the basis of the treatment. (Mr. Quain, *Lancet, Oct.* 30, 1852, p. 397).

In twenty cases of this nature, hot brandy and water was immediately administered along with peppermint and laudanum. Not one case was lost. (p. 439).

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PRACTICAL MEDICINE,

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

Art. 1.—ON THE TREATMENT OF TYPHUS FEVER BY SULPHATE OF QUINA.

By Dr. F. M'Evers, Physician to the Cork Fever Hospital, &c.

[In one of our preceding volumes (Vol. XXV., p. 1), the reader will find an interesting paper on the treatment of typhus by quinine, from the pen of Dr. Dundas, of Liverpool. There is great merit due to this gentleman in introducing this medicine as a remedy for typhus, by seeking to identify the poison of this fever with the remittents and intermittents of the tropics. Dr. Skete so far back as 1786, broached a similar opinion. This author says,]

"If the remittents of warm climates are but the continued fevers of this country, in a more violent degree, and if the effects of the bark are admitted in such remittents, does it not necessarily follow that bark would be endowed with similar powers, even in the fevers which every day occur to our notice, I mean those of the typhus kind, which are frequent in all large towns, especially London and Edinburgh."

[As we have before stated in the preceding volumes, Dr. Dundas, plan is to administer the quina in ten grain doses, until dizziness of the head, or tinnitus aurium, is produced; or until a general amelioration of the symptoms takes place. When tinnitus aurium or dizziness of the head are very urgent Dr. D. resorts to an emetic; and he says, if emetics are had recourse to at an early period, the quina is likely to be more successful.]

This treatment is resorted to in all stages of the disease, and frequently in the advanced periods, under circumstances which would be considered by the experienced physician as indicative of the worst form of typhus fever; and this mode of administering quina is almost invariably attended with the happiest results.

Immediately after having become acquainted with Dr. Dundas' views on this subject, several persons labouring under bad maculated typhus were admitted into our hospital, which gave me opportunities of testing the value of his opinions; and I must confess that I pursued the inquiry with much doubt, as I looked on some of the cures related by him to be of too marvellous a kind to justify my adoption of this treatment without further confirmation of its value: however, I have now tested the remedy in nine cases, and, with the exception of one it has been signally successful. The first of these cases was the following, the notes of which I take from the daily reports of the hospital.

Pat Ryan, aged 28, a labourer, was admitted into the hospital on the 1st Jan., 1852, from Hop Island. His urgent symptom is headach; pulse 100; tongue foul; skin hot; had taken purgatives at home, and was treated since admission in the usual way with salines, ablutions, &c., until the thirteenth day of his illness, when the usual symptoms of bad typhus became apparent. On the previous day his skin was mottled, and now the entire surface has assumed a dusky hue. Pulse 112, feeble; tongue parched, with sordes on the teeth and lips; no sleep; bowels free; some general fulness of abdomen, with epigastric tenderness; kidneys acting; headach increased, and raves a good deal. He was ordered to take ten grains of sulphate of quina every second hour, and to have broth and four ounces of port wine.

The changed condition of this patient at my next visit was most remarkable: the pulse was considerably reduced; the tongue was moist and cleaning, in fact it had lost the dark colour and parched appearance it presented the day before. The man slept; there was less abdominal fulness and tenderness; the kidneys acted well, and the bowels were free. He took sixty grains of quina, without its having produced dizziness or tinnitus aurium. The medicine was given in the form of mixture with a little sulphuric acid,—the two or three last doses sickening him a little. I then ordered it in the same dose in the form of pills, repeating it every three hours, which he bore without sickness. On this day he took forty grains, and on the following day he was convalescent. It is remarkable that the father of this patient, who was admitted a few days before, passed through the same type of fever, treated in the ordinary way, and died on the fifteenth or sixteenth day of his illness.

The second case was that of a young man, aged 19, admitted on the 14th January, for some days under my care, whose urgent symptom was headach, with great prostration of strength. On the eighth day his breathing became very much hurried, unattended, however, with cough, nor did the stethoscope elicit any abnormal sound: the man being remarkably pallid, except during two short exacerbations which occurred in the twenty-four hours. I ordered him aromatic spirit of ammonia mixture, with a small quantity of wine, and a sinapism to his chest. The following morning, on examining the chest, I discovered a purple patch occupying the part to which the mustard had been applied. His respiration was improved, but he complained of intense headach. Pulse 108, and feeble; no sleep. The purple patch induced me to make a careful examination of his body, and on turning him in the bed I observed the lower portion of the back and the nates covered with purple maculæ. The case I looked on then as well adapted for the administration of quina, and, accordingly, I ordered ten grains every two hours, together with broth, and two ounces of port wine. The third dose produced violent headach, with tinnitus aurium, when the medicine was discontinued. At my next visit, on the following morning, all his symptoms were improved: the tinnitus aurium left him in a short time after the medicine was laid aside, and the headach was greatly mitigated; he slept, and expressed himself much better. I placed him again on the quina, when the third dose produced the same results as yesterday, but there was so great an amelioration of all his symptoms that I considered him proceeding to convalescence, and gave him only two grains of quina three times a day, after which he rapidly recovered.

The next two cases were females, both of whom presented unfavourable symptoms, and in whom the remedy was equally successful.

The fifth case was one of great interest, exhibiting other symptoms of an unfavourable nature, in addition to those enumerated in the preceding.

John Eames, aged 55, a smith, was admitted on the 23rd of January, with bad typhus, having been discharged from hospital on the 3rd inst., cured of ordinary fever with bronchial complication. On the ninth day of his second attack he became mottled and talked incoherently; on the tenth day he was not improved; he had no sleep; the tongue was parched and dark, and protruded with difficulty; stools involuntary; pulse 120, and feeble. He was ordered to take ten grains of sulphate of quina every second hour, and to have broth and two ounces of port wine.

Half-past 9, p.m. The quina was commenced at one o'clock; he has taken fifty grains, and appears improved in every respect; he is more collected and speaks with less difficulty; he has had two large voluntary evacuations from the bowels; the medicine was directed to be continued.

On the 11th day, I found that he had taken sixty grains since my last visit, and although he did not sleep much, and had some singultus in the night, he was much improved in other respects. The pulse had come down to 100; the tongue was still parched and brown, but he was perfectly conscious; he was very deaf and the maculæ were improved in colour. On this day he took only four doses of quina, it having been omitted on account of the "buzzing," as he expressed it, which the remedy produced.

12th day. Pulse 96; tongue moist and cleaning; bowels open, and he passes water freely; to take five grains of sulphate of quina every fourth hour.

13th day. Pulse 84; tongue clean; skin cleaning and scaly; convalescent.

I will not occupy time with the details of all the cases in which I have tried this remedy, but will content myself with the recital of one more case, which occurred within the last few days, and which I consider in every way worthy of observation.

Mary Delany, aged 22, admitted from Ballincollig on the 10th March; nine days ill; headach; petechiæ; pulse 120, and very feeble; tongue parched; got the usual aperient of the hospital.

10th day. One stool; pulse 130, feeble; tongue parched and split; great thirst; respiration hurried; had no sleep; she is often flushed, and in the intervals deadly pale; countenance anxious, with the appearance of suffering; great fulness of abdomen, with tenderness on pressure, especially at the epigastrium; maculæ of a dark brown. She was ordered ten grains of sulphate of quina every second hour, and to have broth and two ounces of red wine.

11th day. Bowels not open; tongue moist and cleaning; pulse 100; kidneys acting.

12th day. At eight p.m. last evening this girl became very stupid; "did not know what to do with her head," as she expressed herself; she also became deaf, and had tinnitus aurium; this state continued until midnight, with occasional sleep, when she became "lighter," and afterwards slept well; the kidneys have acted, but there is no discharge from the bowels; she now presents a totally different appearance from that of yesterday; she is free from headach, her respiration is natural, the tension and fulness of belly have disappeared, but there is still some slight epigastric tenderness; some of the maculæ have disappeared, and the remainder are of a lighter colour. The sulphate of quina to be continued every fourth hour.

13th day. No stool; tongue clean and moist; pulse 84; belly natural; slight epigastric tenderness. The quina to be omitted; broth and wine to be continued; to have a domestic enema.

14th day. Convalescent.

Since the first introduction into Europe of the Jesuits' bark in 1649, the most celebrated writers extolled its efficacy in the treatment of various diseases, but especially in fevers; owing, however, to some cause or other, it fell into disuse; and it is probable that this was occasioned by the many failures which attended its administration; failures which I now feel assured were owing principally to two causes:—first, the bark not having been given in sufficiently large doses; and secondly, the bark not having been always of the genuine kind. Its use was revived by the celebrated Sydenham, and after the time of that eminent man, its excellent qualities were fully established by Hoffman, De Haen, Pringle, Cleghorn, and other practitioners of eminence. And it is worthy of remark that those who were most enthusiastic in praise of this remedy gave it in very large doses. Dr. Clarke, a celebrated physician who wrote on fever in the year 1770, was in the habit of prescribing bark in two drachm doses every two hours, and at the same time of exhibiting it by the rectum in the form of enema; he relates that on one occasion in mixing a dose of bark for a patient, he discovered that the apothecary had by mistake put half-an-ounce of bark into each paper instead of two drachms, which he had ordered; the patient had been taking this large dose for a considerable time, and got cured of a bad typhus in consequence. Now, when it is estimated that two pounds of good bark will yield about two hundred grains of sulphate of quina, it must be admitted that Dr. Clarke's treatment of typhus was not far short of the heroic method of the present day introduced by Dr. Dundas. It is unnecessary to advert to the fact that Dr. Clarke's patients were taking a different preparation, possessing, however, the same active base.

One great objection to its general use in this country, which may be advanced, is the high price of the salt; but should the remedy be found as efficacious in the practice of others as by Dr. Dundas and myself, I feel assured that its use, when applicable, would eventually constitute the true economy of our fever hospitals.—*Dublin Quarterly Journal, August,* 1852, *p.* 100.

[We have a few interesting remarks on this subject by Mr. Hayward, of Liverpool, who has made particular observations upon eighty successive cases of the typhoid type of fever.]

The first symptom, in twenty of them, was diarrhœa; in twelve, diarrhœa and vomiting; in seven, vomiting alone; the rest began with pain in the head. All had pain in the head afterwards; sixty-six describing it as "lightness"; fourteen as "heaviness". All had tenderness of abdomen—nine to a great extent. Seventy-one complained of soreness of the flesh over the whole body—some to such an extent that their impression was that they had rheumatism. Seventeen had considerable inflammation of the sub-maxillary glands. Seventy-three had delirium, twenty-one of which were very severe. In all, the tongue became very dry, brown, hard, and cracked; the first crack was generally a deep, longitudinal one down the centre of the tongue, (even whilst it was clammy and velvety in appearance, and of a milk-and-water colour), extending from the base to nearly the apex; then many transverse and oblique ones. In twenty-four, the skin became rough and brown, with petechiæ observable. In all, the thirst was intense; and the other symptoms of fever were not less evident; therefore suffice it to say, they were well-marked cases of fever of the typhoid character.

In twenty-seven the treatment was commenced in the "first stage"; in fifty-three, in the "second stage". Three were fatal. All the rest recovered more or less quickly.

The principal treatment in all, except one, was the use of disulphate of quina,—so much recommended by Dr. Dundas, of this town,—of course modified according to the predominating symptoms. Thus, if I found the pulse quick, weak, and thready; the tongue cracked, brown, and dry, (rough or smooth); great thirst and delirium; no appetite; tenderness of abdomen; soreness of flesh, &c., I put the patient upon disulphate of quina, in solution, at once; four or five grains every two hours. If great restlessness, and no sleep, I added three or four minims of tincture of opium to each dose. If general sinking of vital powers, some wine or brandy, with beef-tea. If the solution of quina were vomited, it was given in an equal quantity of wine, or wine and water. If the patient continued sinking, I increased the quantity of quina, but never had occasion to extend beyond seven grains per dose. When ringing in the ears occurred, the quantity was decreased, but still kept up till there was a good appetite. If the delirium was intense, the pain in the head described as heavy, (which were always strong subjects, whose bowels were confined), with strong pulse, a dose of chloride of mercury, and sometimes a blister to the nape of the neck. If tenderness of abdomen was great, a few leeches, or sinapism. If vomiting, a sinapism over the stomach. If diarrhœa, a little calomel and opium, or diacetate of lead and opium; though this symptom sometimes required nothing more than the tincture of opium given with the quinine.

In seventy-nine cases, marked improvement was observable in the course of twelve hours: the pulse was the first to improve, then the delirium to give way, then the pain in the head, the thirst, the soreness of flesh, tenderness of abdomen, dryness of tongue, and the appetite to improve. A pulse of 120, small and thready, would become 90, softer and fuller; and in the majority of the cases the pain in the head and delirium ceased entirely in the same period, and a rapid improvement followed; with the small exception of two cases of children ten and eleven months old, neither of whom had the medicine regularly, and both were complicated with bronchitis. The eightieth case was that of a woman, in which quina was not used. These three died, evidently from typhus. If the typhoid symptoms were allowed to become well marked, and the patient to sink much, his recovery was slow, and he required wine or brandy. I feel confident, from personal observation, that were the disulphate of quina to be used promptly, and to cinchonism, the mortality even of typhus itself would be very small.—*Lancet, Oct.* 9, 1852, *p.* 324.

2.—ON ERUPTIVE FEVERS.

By Professor Bennett, Edinburgh.

[There are certain diseases which may be justly classified under the term eruptive fevers, that is, there are certain diseases of an infectious or contagious character, marked by the peculiarity of an eruption upon the skin, differing in each. Examples of this kind are scarlatina and variola, while, at the same time, plague and glanders must be arranged under the same head.]

The present theory, with regard to the cause of these diseases, is, that it depends upon a morbid poison, a small quantity of which entering the blood produces in that fluid a peculiar change which is analogous to that of fermentation. To distinguish this change in animal from what occurs in vegetable fluids, the term *zymosis* has been introduced by Mr. Farr.

Some of these animal poisons, if excluded from the air, or carefully dried, will retain their communicating property for a longer or shorter time. This enables us to preserve matter for artificial inoculation. Hence also they have been supposed capable of attaching themselves to fomites—that is, substances of a rough surface or downy texture, such as wool, cotton, wearing apparel, dust, &c. It is on this theory that quarantine regulations are founded, the whole of which, together with the facts, real or supposed, that support them, require a thorough revision.

All the animal poisons are distinguished by peculiarities in their mode of incubation and development. Thus a period of latency exists between exposure of the poison and accession of the fever, or first rigor. Again, the eruption appears at different periods after the fever is declared. Thus—

	Period of Latency from	Appears after first Rigor in from
Scarlatina, ...	4 to 8 days	18 to 24 hours.
Erysipelas, ...	4 to 7 days	24 to 60 hours.
Variola, ...	8 to 14 days	48 hours.
Rubeola, ...	7 or 8 days	72 hours.

All the eruptive fevers, strictly so called, invariably run a natural course, and cannot be cut short. It follows that—

The treatment of febrile eruptions has for its object conducting these cases to a favourable termination. To this end exactly the same general rules are to be followed as I previously gave when speaking of continued fever, and the same indications exist for the use of salines and laxatives, cold to the head, wine and stimulants, and regulation of the diet.

[*Scarlatina.*—After relating two cases of mild and one of severe scarlatina, Dr. Bennett remarks, that great watchfulness is required on the part of the practitioner, especially when the crisis is expected, that if the pulse at all falters, and prostration comes on rapidly, he may be prepared to meet it. When death does occur in a primary attack of scarlatina, it is from the same cause as in death from typhus—it is from congestion of the brain, as indicated by delirium, passing into coma, and followed by prostration of the vital powers.]

The most recent system of treatment which has been brought forward is that recommended by Dr. Andrew Wood; and I notice it in deference to the great experience that gentleman has acquired from his position as physician to Heriot's hospital and other educational establishments in this city, which have been attacked by numerous epidemics of the disease. He considers that the most efficient and safe method of treatment consists in acting powerfully on the skin, with a view of thereby assisting nature to eliminate the scarlatinal poison from the system. As ordinary diaphoretics frequently fail, he has recourse to the following method:—Several common beer bottles, containing very hot water, are placed in long worsted stockings, or long narrow flannel bags, wrung out of water as hot as can be borne. These are to be laid alongside the patient, but not in contact with the skin. One on each side, and one between the legs, will generally be sufficient; but more may be used if deemed necessary. The patient is to lie between the blankets (the head of course being outside) during the application of the bottles, and for several hours afterwards. In the course of from ten minutes to half an hour, the patient is thrown into a most profuse perspiration, when the stockings may be removed. In mild cases, the effect is easily kept up by means of draughts of cold water, and if necessary, the use of two drachm-doses of sp. mindereri every two hours. In severe cases, where the pulse is very rapid—the beats running into each other—where the eruption is either absent or only partial, or of a dusky purplish hue—where the surface is cold—where there is sickness or tendency to diarrhœa—where the throat is apthous or ulcerated, and the cervical glands swollen, then he follows up the use of the vapour-bath by four or five grain doses of carbonate of ammonia, repeated every three or four hours. Should this be vomited, then brandy may be given in doses proportioned to the age of the patients. Carbonate of ammonia he considers to act beneficially: 1st, by supporting the powers of life; 2d, by assisting the development of the eruption; and 3d, by acting on the skin and kidneys. Where the vapour-bath was used early in the disease, and its use continued daily, or even twice or thrice a day, according to circumstances, he has found that the chance of severe sore throat was greatly obviated. In regard to supervening dropsy, he considers that, by the use of the vapour-bath, with the other necessary precautions as to exposure, diet, &c., its recurrence is rendered much more rare. In the treatment of the dropsical cases, it was also very useful, and even might be trusted to entirely in some cases. Dr. Wood also condemns all depleting treatment, and even purgatives, during the first ten days, as not only not required, but positively dangerous, as tending to interfere with the development of the eruption. In the later stages, as well as in the dropsy, however, he thinks purgatives are often beneficial.

The general plan of this treatment appears to be so far rational that its object is to hurry forward the disease by applying damp heat to the skin, and by thus assisting nature to make her operations more perfect than they might otherwise be. In other words, by rendering the febrile eruption more complete, diminish the risk of its leaving behind it a tendency to subsequent disease. Whether this plan as a whole will, in practice, prove more extensively beneficial than any other, can only be determined by an extensive trial and careful comparison of the results.

[*Erysipelas* is next considered.]

Erysipelas, is opposed to scarlatina, in being the least infectious of the eruptive fevers, in being the least fatal, and in running a much slower course. In many other respects there is a close analogy between them observable in the kind of fever, the sequelæ, and critical discharge of coagulable urine, as lately pointed out by Dr. Alexander Wood and Dr. James W. Begbie. The general indications for treatment are the same. The special treatment is directed by means of topical applications to diminish the local inflammation. For this purpose numerous remedies have been tried,—such as dusting the part with flour, lotion of acetate of lead and opium, cerates, oil, &c., &c.,—any of which serve the purpose of cooling the surface, rendering it more soft, and diminishing irritation.

There can be no doubt that erysipelas is occasionally a fatal disease, from the intensity of the fever, and amount of integument involved. It is generally supposed that, when it attacks the face and scalp, it is more dangerous than when a similar amount of surface in any other part is affected. This opinion does not appear to be founded on very exact observation. Even when the scalp is extensively invaded, death from erysipelas is a rare occurrence. On going round the wards of the Hotel Dieu in May 1851, with M. Louis, I saw several severe cases of erysipelas of the scalp, which, I was told, were under no treatment whatever,—because, as M. Louis informed me, according to his experience, erysipelas of the scalp was *never* fatal, unless it occurred in individuals of bad constitutions, or was associated with some complication. I need not say that, without forming any such exclusive opinion as this, it must be very difficult, in a disease that so generally tends to recovery, to judge how far this or that remedy is beneficial. Mr. Hamilton Bell has lately recommended fifteen to twenty drops of tr. ferri muriatis every second hour, as a most beneficial remedy in erysipelas. But how this medicine is more successful than the spontaneous operation of nature, it must be very difficult to determine.

[In considering *Variola*, Dr. Bennett records a case of severe confluent small-pox occurring in a girl aged 7. On December 10th, the hair was cut short, and the face covered with the mercurial ointment thickened with starch. The case terminated favourably, as she was dismissed cured on January 6; the face scarcely presenting any traces of the disease, and affording a marked contrast to the rest of the skin. Speaking of this case Dr. Bennett observes:]

The entire face was so crowded with the papules and minute vesicles of the incipient stage, that there was literally not room to place a pin's head anywhere on the sound skin. It was evident that the whole surface of the face would be one mass of suppuration; and such of you as have had an opportunity of observing such a case of the disease, must be aware of its horrid aspect, the excessive agony produced, the great swelling of the eyelids, the dreadful suppuration and fœtor of the discharge, the violent secondary fever, and the frightful cicatrices with which the countenance is afterwards covered. In this case none of these symptoms were present, and there can be no doubt that the ectrotic treatment really checked the progress of suppuration and modified the disease. From the moment the plaster was applied, all smarting and pain in the face ceased; the eyelids were never swollen; no suppuration occurred; there was no secondary fever; and on the mask leaving the face there was no pitting or suppuration. In other parts of the body the eruption passed through its usual stages, and the girl was dismissed from the house well, thirty days after the first commencement of the eruption. Considering this case was likely to be a very severe one, I felt myself authorised to use every means in my power to check the disease; and as it has been asserted that vaccination, even after the commencement of the eruption, modifies its progress, I caused the girl to be vaccinated on first seeing her. At that time the face, as we have seen, was closely covered with papulæ and vesicles; and I do not think that vaccination alone could have produced the remarkable result we have witnessed. I do not mean to deny altogether the influence of vaccination in such cases, but I have no hesitation in ascribing the beneficial result almost entirely to the ectrotic treatment.—*Monthly Journal of Medical Science, Oct.*, 1852, *p.* 400.

3.—ON TEMPORARY ALBUMINURIA; MORE PARTICULARLY OCCURRING IN THE COURSE OF CERTAIN FEBRILE OR OTHER ACUTE DISEASES.

By Dr. J. W. Begbie, Physician to the New Town Dispensary, Edinburgh, &c.

[Dr. Begbie divides his subject into three parts—*Desquamative Albuminuria*, under which head he classes the urine in erysipelas, Asiatic cholera, and scarlatina; *Inflammatory Albuminuria*, under which he places the urine in the dropsy following scarlatina; and *Critical Albuminuria*, in which he considers the urine in pneumonia and certain cases of typhus. In speaking of the first head, he states his belief that in every case of scarlatina a small amount of albumen would be found on careful examination. This is generally found three or four days after the commencement of desquamation. In examining the urine, both the nitric acid and heat tests should be employed. It should be carefully made for a few days before, and until the process of desquamation is fairly completed. Dr. Begbie believes that after it has once disappeared it will not return.]

The microscopic character of the urine, with which the albumen is invariably associated, is the presence of a considerable amount of epithelium, derived from the different parts of the urinary apparatus. Sometimes the entire epithelial lining of the small tubes of the kidney was present, though certainly not frequently. I do not remember to have ever seen in the urine of simple scarlatina the albuminous or fibrinous casts of the small tubes of the kidney, the appearance of which is so common in the urine of the dropsical affection. Besides epithelium, the urine generally contained amorphous urate of ammonia, sometimes crystalline uric acid; and occasionally, though very rarely, the urine, though examined very soon after micturition, contained crystals of the ammoniaco-magnesian phosphate. In all such there existed a greater than usual amount of epithelium and mucous sediment. It is not uncommon to find octahedral crystals of oxalate of lime in the urine at the same stage of the disease.

The pathological import which the existence of albumen in the urine denotes, is a point on which difference of opinion must still be expected to exist, seeing not only how very different are the facts recorded in regard to the occurrence of albumen, but how varying is the estimation of the importance which is awarded to its presence. While many believe its manifestation to be accidental, and of no importance, there are others who conceive it, if at the time unaccompanied with dropsy, to be its certain prelude. Both of these opinions I have attempted to show are erroneous, and, at least as far as my own observations go, founded on incorrect data. What, then, is the cause of albumen in the urine in simple scarlatina, and what its pathological import? I conceive it to be as essential a symptom of the disease as is desquamation of the cuticle—to be associated to a certain extent with that desquamation—to be, in fact, the result of a desquamative process, which the mucous membranes in this disease, equally with the skin, are subject to. Granted, then, that this desquamation occurs, when such a change is taking place in the epithelial membrane lining the minute tubes of the kidney, the office of the cells composing which is to eliminate from the blood the matters, solid or fluid, which in the normal exercise of the renal function, compose the urine, it surely is not surprising that the albumen from the former should, to a slight amount, enter into the latter. Such I believe to be the cause of its occurrence; nor can I regard its presence as indicating any pathological condition, further than the separation of epithelial cells and their passage in the current of the urine. No symptoms referable to any such condition occur, no febrile reaction, no lumbar pain, no non-elimination of urine, no suppression of its watery parts, not even any diminution in its quantity, and, with the exception alone of the presence of albumen, no marked alteration in any of its sensible qualities. I have said that this albuminous condition of the urine in scarlatina is associated with the cuticular desquamation, it is so in the time of its occurrence, and so it is also as regards its amount; for I have noticed the albumen in the urine to be greatest in amount, and to continue longest, in those cases in which the process of desquamation had taken place to the greatest extent. In those cases of the urine of which no coagulability has taken place—for my more recent experience has shown me a few such—there has been no very marked desquamation, and no direct evidence of any epithelial separation, as shown by examination of the urine. We know that in many cases of scarlatina, especially in those where the eruption, though well-marked, has not been brilliant, extensive, or lasting, it is not uncommon for the desquamative process not to take place at all, or at most to a comparatively very slight extent. Such are the cases in which the coagulability of the urine will perhaps not occur. I say *perhaps*, for in some such I have, notwithstanding, found it. I am still, therefore, disposed to regard the temporary albuminuria of scarlatina as probably as frequent in its occurrence, and of somewhat of the same importance as a symptom, as the desquamation of the cuticle.

[In speaking of the urine in Asiatic Cholera. Dr. Begbie remarks, upon the suppression of urine as a marked symptom of a return to the proper quantity of that secretion, marking a favourable change in the disease. In many cases of death from cholera, death seems to have been produced from a poison in the blood, producing coma —such as is ordinarily the case where suppression of urine has occurred.

In Erysipelas, though the urine is frequently found albuminous during convalescence, yet it is not so certainly so as in scarlatina.

Inflammatory Albuminuria.—Under this head Dr. Begbie refers to one example—the Dropsical disease following Scarlatina—as follows:]

Every one who has paid attention to the condition of the urine in this most interesting affection, must have noticed the great dissimilarity subsisting between its external and other characters, and those of the urine in simple scarlatina; while in the latter, the amount of urine passed, except during the continuance of febrile symptoms, is undiminished, one of the most certain forerunners, as it is always the most invariable accompaniment of dropsy, is the excessive reduction of the quantity of urine. This urine, when further examined, is found to contain a large amount of albumen; while, under the microscope, frequently blood, not unfrequently exudation corpuscles or compound granular cells, always much epithelium, and the fibrinous casts of the renal tubes are recognised. The symptoms which accompany these changes in the urine are generally well-marked, the most prominent, save the dropsy, being a very uneasy, often severe, lumbar pain, and marked febrile excitement. But, independent of these general symptoms, it will, I think, be admitted, that the characters presented by this urine, while they differ from those of the urine in simple scarlatina, indicate also the existence of a much more serious change in the secreting mucous membrane of the kidney, than a merely desquamative one. In order, however, to arrive at a correct opinion in regard to the pathological importance of the change undergone in the kidney during the dropsical disease, it is necessary to bear in mind both the symptoms presented by the patient and the hints afforded by the characters of the altered urine. These taken together give evidence of general febrile excitement, and of renal congestion, inflammation, and exudation. I have examined the urine in many such cases, and have found the albuminous condition much more lasting than in the simple cases,—indeed observation and experience show now pretty plainly that the long-continued albuminuria of dropsical scarlatina may, and often does, lead imperceptibly—insidiously it may be—to organic renal disease. In many instances I have found the albumen, though large in amount, and associated with all the general and local inflammatory symptoms alluded to, speedily and entirely disappear. I have not seen many cases of the dropsy following scarlatina, which I had watched from the commencement of the primary disease, but I have seen a few, and in all such the dropsical and aggravated symptoms appeared at the time the temporary albuminuria was going on, and were evidently the result of exposure to cold. This variety of albuminuria, then, which I have called inflammatory, may or may not be *temporary:* it is to be feared that not unfrequently neglected, or even unskilfully treated, the affection it accompanies lays the foundation of permanent renal disease. In most cases, however, it is fortunately otherwise, while in nearly all it may be looked upon as, under judicious management, a curable disorder.

[*Critical Albuminuria.*—Several trustworthy observers have noticed the frequent occurrence of albuminuria in pneumonia, and, says Dr. Begbie,]

To this albuminuria I have given the title of Critical Albuminuria, because my data being correct, and my conclusions justifiable, it is to be regarded as an evidence of a critical action, and commencement of a change undergone by a diseased part before its return to a healthy state. But I can further illustrate this subject by a reference to changes which occur in some cases of typhus fever. I have found albuminuria by no means an uncommon attendant on the convalescence from typhus; not, however, nearly so invariable in its occurrence as in scarlatina, or even so common as in pneumonia; so frequent, however, as to lead me to examine all cases in which it occurred, and that with very great care. The result has been, that no one of any such cases has, either at the time or during a considerable period of observation afterwards, afforded the evidence of any organic change in the kidneys to account for the albumen in the urine.

The albuminuria in the case of typhus appears to me of special interest, as occurring much more frequently, if not entirely, in certain cases of typhus. It is in those cases in which we know, or have reason to suspect, that the deposits, generally called typhus deposits, have taken place in internal organs, that we find albumen in the urine. Two or three observations of a somewhat different nature have led me to this conclusion; for example, I have found the urine albuminous in cases of abdominal typhus,—that is, in those cases in which we generally find severe diarrhœa as a symptom during life, and deposit in the intestinal glands as the most prominent lesion after death. In several cases of this kind, which proved fatal, I have found albumen in the urine for days before death; and in others, which happily recovered, I have as frequently noticed its occurrence. In both those instances the albumen appeared, for the most part, at an advanced period of the disease, at least after the particular symptoms had continued for some time; while in the former the albuminuria continued up to death; in the latter, in some it disappeared as convalescence was fairly established; and in others it lasted for a longer period. The amount of albumen in these cases, and the other characters with which the coagulability was associated, were exactly as I have described them in the example of pneumonia; and finding the albuminuria to bear a relation to the deposits in internal organs in typhus, I have been led to regard the kidneys as the emunctories by which the morbid matter so deposited is to a certain extent at least removed from the system,—and so doing, to regard the temporary albuminuria of typhus as a critical albuminuria. It is, I think, no objection to this view that deposits, such as those referred to, remain in organs for a lengthened period; for, firstly, I do not think we can pretend to limit the period of their removal or disappearance; and I am inclined to believe that, when they do so disappear, the urine will very probably contain the ingredients I have noticed; and secondly, the calcareous masses found in the spleen, and other organs, accepted as the earthy remains of the deposits spoken of, certainly attest the removal by some channel or other of the animal matter, of which, in their original condition, these deposits were partly composed. This is an interesting subject, and invites further inquiry.—*Monthly Journal of Medical Science, October,* 1852, *p.* 321.

4.—*Ague treated by Terebinthinate Liniment along the Spine.*—M. Aran mentions, in the 'Bulletin de Thérapeutique,' that he has succeeded in staying ague fits by the use of the following liniment: Essential oil of turpentine, three ounces and a half; chloroform, about one drachm. The patient was a young man with whom quinine had failed, and the above liniment was used about two hours before the fit. The latter appeared at the usual hour, but was somewhat shorter than the preceding; the second was kept off for four hours; the third failed to appear altogether, and the patient was soon quite well, experiencing only for a few days a certain amount of discomfort at the accustomed hour of the fits. The liniment had several years ago been introduced by M. Bellencontre, laudanum being, however, used instead of the chloroform employed by M. Aran.—*Lancet, July* 31, 1852, *p.* 107.

5.—*On the Action of Ozone on Miasmata.* By M. Schönbein.—M. Schönbein's additional researches have still further developed the analogy of this substance to chlorine, and leave no doubt of the injurious effects it may exert on the respiratory organs when in excess. Mice soon perish in an atmosphere containing 1·6000. The quantity which prevails in the atmosphere is very variable, being proportionate to the amount of electricity, and therefore at its maximum in winter, and its minimum in summer. It is, however, highly probable that, when existing only in minute quantities, it exerts a purifying effect on the atmosphere by destroying various deleterious miasmata. There are a great number of inorganic gaseous bodies, which, when diffused in scarcely appreciable quantities, yet render the air irrespirable—such as the gaseous compound of hydrogen with selenium, sulphur, phosphorus, and arsenic, gases characterised by the facility with which they become oxidized. Ozone belongs to a class of bodies which, as agents of oxidation, rapidly destroy these hydrogenous compounds. An incessant source of miasmata exists in the variety of gaseous compounds which are incessantly liberated by the decomposition of the innumerable masses of organic beings which perish on the surface of our globe. Although the composition of these is unknown, it is to be supposed that their accumulation would render the air unfit for respiration. Nature has, however, provided the means of destroying such deleterious compounds as fast as they are generated, for M. Schönbein regards ozone, which is so constantly generated under electrical influence, and is so powerful an agent of oxidation, even at ordinary temperature, as specially destined to that end. His experiments prove that air containing 1-6000 of ozone can disinfect 540 times its volume of air produced from highly putrid meat; or that air containing 1-3,240,000 of ozone can disinfect an equal volume of air so corrupted. Such experiments show how little appreciable by weight miasmata may be, which are yet sensible to the smell, and how small is the proportion of ozone necessary for the destruction of all the miasmata produced by the putrefaction of organic matter, and diffused in the atmosphere.

We may admit that the electrical discharges which occur incessantly in different parts of the atmosphere, and determine there the formation of ozone, purify the air by ridding it of oxidizable miasmata. At the same time that these are destroyed by ozone, the organic miasmata cause its own disappearance, and prevent dangerous accumulation of it. The opinion that storms purify the air may not be without foundation, as a large quantity of ozone is then produced. In the author's experiments, he has always found a large proportion of ozone in the vicinity of the stormy clouds on the Jura; and air ozonized by phosphorus for experiment, gives forth a similar smell to that perceived amidst storms in mountainous regions. It is very probable, that in certain localities, the balance between the ozone and miasmata does not prevail, and disease may be the consequence. As a general rule, however, numerous experiments have shown that the air contains free ozone (though in very different proportions), so that no free oxidizable miasmata can there exist. M. Schönbein recommends that the atmosphere should be tested for ozone, in localities and at periods where fevers and other forms of disease prevail, so that the results of accumulated observations may be obtained.—*Arch. des Sciences.—Medico Chirurgical Review, July, 1852, p.* 254.

6.—*On the Influence exerted by Chronic Diseases upon the Composition of the Blood.* By MM. BECQUEREL and RODIER.—The following are the conclusions of a paper recently read at the Académie des Sciences, detailing the results of MM. Becquerel and Rodier's latest hæmatological researches.—1. The majority of chronic diseases and various antihygienic circumstances induce an increase or diminution in the three principal elements of the blood—the globules, the fibrine, and the albumen, and this either separately or simultaneously.—2. The globules undergo diminution in the course of most chronic diseases of long duration, and especially in organic diseases of the heart, the chronic form of Bright's disease, chlorosis, marsh cachexia, hemorrhages, hemorrhoidal flux, excessive blood-letting, the last stages of tubercular disease, and the cancerous diathesis. The same result is observed in those whose food is not sufficient in quantity or reparative power, or who are exposed to insufficient aëration, humidity, darkness, &c.—3. The albumen of the serum of the blood is diminished in quantity in the third stage of heart disease, great symptomatic anæmia, the cancerous diathesis, and insufficient alimentation.—4. The fibrine is maintained at its normal proportion, and sometimes increased, in acute scorbutus. It is diminished in chronic scorbutus, as also in the scorbutic condition symptomatic of certain chronic diseases, which is most often and most markedly observed in organic diseases of the heart.—5. In all the above-mentioned circumstances, the quantity of water contained in the blood becomes very considerably increased.—6. A diminution of the proportion of globules is especially accompanied by the following phenomena: a colourless state of the skin, palpitations, dyspnœa, a *bruit de soufflet* heard at the base of the heart during its first sound, an intermittent *bruit de soufflet* in the carotids, and a continuous *bruit* in the jugulars.—7. The diminution of the proportion of albumen, even though not very considerable, when it takes place in an acute manner, rapidly gives rise to the production of dropsy, but it requires to be much more considerable when not appearing in the acute form. Considered in a general manner, dropsy is the symptomatic characteristic of a diminished proportion of the albumen of the blood.—8. A diminished proportion of fibrine is manifested by the production of cutaneous or mucous hemorrhages.—9. In anæmia symptomatic of considerable hemorrhage or insufficient alimentation, the change in the blood is characterised by a diminution of its density, an increase of the water, diminution of globules, a maintenance of the normal proportion, or sometimes a slight diminution of the albumen, and a normal proportion of fibrine.—10. In chlorosis, which is an entirely distinct affection from anæmia, there may be no changes in the blood whatever. When such are present, they consist in a diminution of the proportion of globules, an increase of that of the water, and the normal quantity or an increase of the fibrine.—11. In the acute form of Bright's disease the fibrine continues normal, and the albumen is diminished. In the chronic form there is a diminution of globules and albumen, and sometimes of fibrine.—12. Most of the dropsies regarded as essential depend upon a diminution of the proportion of albumen; and usually originate in a material cause, consisting in a degeneration of the solid or fluid parts of the economy.—13. In diseases of the heart the blood becomes more and more changed, as they approach the fatal termination. The changes consist in the simultaneous diminution of globules, fibrine, and albumen, and an increase of water.—14. In acute scorbutus, the principles of the blood do not undergo any appreciable modification. In the chronic form the fibrine is notably diminished, while the globules are sometimes considerably increased. In both forms, the increase of the proportion of the soda of the blood explains all the circumstances; but it has not yet been demonstrated.—15. The above modifications should influence our therapeutical management of these different morbid conditions, as each element of the blood is susceptible of special modification. Thus, when the proportion of albumen is diminished, we prescribe cinchona, and a tonic strengthening diet. A diminution of fibrine and an increase of the soda of the blood are to be met by good diet, vegetable acids, and appropriate hygiène; and by hygienic measures and the exhibition of iron, we combat the diminution of globules. *L'Union Médicale.—Medico-Chirurgical Review, July,* 1852, *p.* 256.

7.—*Statistics of Cancer.* By JAMES PAGET, Esq.—[In a recent lecture read before the College of Surgeons, Mr. Paget stated "that persons operated upon for cancer die upon an average thirteen months sooner than those upon whom no operation is performed." This remark had reference only to cases of scirrhous cancer of the breast. Mr. Paget says:]

I believe that the general average duration of life, after the patient's first observation of the disease, is forty-nine months; that the average life of those whose breasts are removed, and who survive the effects of the operation, is about forty-three months; and that the average life of those in whom the disease is allowed to run its course, is about fifty-five months.

In my second lecture I said that the general result of operations for medullary cancers is very different; and that, although they are so seldom long survived that they are generally considered to be less beneficial than the operations for scirrhous cancer of the breast, yet, on the whole, they are more so. The general average length of life of persons affected with medullary cancer of the eye, testicle, breast, bones, or other external organ, may be reckoned at about twenty-four months from the first notice of the disease; but I believe the average for those from whom the primary disease is removed, and who do not die in consequence of the operation, is about thirty-four months; while the average for those in whom the disease is allowed to run its course, is scarcely more than a year.

In my third lecture, I expressed the belief that, on the whole, the removal of epithelial cancers is even more effective in prolonging life than the operation for medullary cancers; but that the wide diversities in the duration of life among those affected with this form of cancer, make it very difficult, at present, to deduce such an average as may be relied on. And I would repeat what I said in one of the lectures, respecting all these averages of life—namely, that such general results, however true, deserve only general consideration in the treatment of particular cases of cancer. They may justly determine a general rule of action, but it can be only such a rule as must admit of numerous exceptions. In many cases of scirrhous cancer there are sufficient reasons for operating; and in many cases of medullary and epithelial cancers, reasons as sufficient for refraining. The right course must, in each case, be determined by a just appreciation of all the conditions each presents.—*Lancet, June* 19, 1852, *p.* 608.

8.—*Signs of the Scrofulous Habit.* By DR. TYLER SMITH.—The author contests the general, and we believe correct opinion, that the engorgement of the lymphatic glands, seen in feeble children, is a constitutional affection. He states that in his opinion the disorder is at first local only, and does not depend on any specific constitutional taint, and therefore that these enlarged glands are not to be received as evidence of a scrofulous habit. He, however, mentions one which he considers an unfailing sign of scrofula in young children. It consists of enlargement of the fingers, particularly to the first and second phalanges. The tumidity is chiefly seen over the metacarpal bones, the joint remaining of the natural size or nearly so. The swelling is soft, but not œdematous, and evidently consists of infiltration amongst the deeper structures of the finger. The surface is pale and shining, conveying the impression of semi-transparency when the tension is great. Unless in the advanced stages, there is no pain; the last phalanx is seldom affected, and the point of the finger appears by comparison smaller than usual. The seat of this curious change appears, in the first instance, to be in the periosteum, and sometimes enlargement of the finger begins a few weeks after birth. Whenever the puerile finger is morbidly enlarged in the manner described, the scrofulous constitution may be anticipated; and the author believes the tumid finger to be the earliest indication of this state presented by young children. When it is observed, the subjects of it require that every exertion should be used to remedy the general debility, of which it is the certain and unmistakable sign.—*Lancet, May* 15.—*Provincial Med. and Surg. Journal, July* 21, 1852, *p.* 382.

9.—CASE OF HYDROPHOBIA.

By DR. J. A. LAWRIE, Professor of Surgery in the University of Glasgow, &c.

[Mr. Hislop of Renfrew, first saw the following case, and requested Dr. Lawrie to meet him in consultation. The usual spasmodic symptoms of hydrophobia had begun to manifest themselves, the slightest impression of the air causing a renewal or an increase in the spasms. A purgative enema was administered amongst other remedies, but brought with it only a little blood, after which, the paroxysms became more severe. Dr. Lawrie thus continues his account:]

I saw her about a quarter to one p.m., and was much struck with what I witnessed. On entering the bed-room, I saw a robust, fine-looking young woman in bed, seemingly under great suffering. She turned her head towards me as I entered, with a sudden movement, and I shall not soon forget her wild expression as she gazed at me for an instant, and threw herself back upon her pillow. I especially remarked the following particulars:—

(*a*) The flash of her eyes—wild, excited, half-hopeful, half-defiant—such as I had never remarked in a sane patient before.

(*b*) Her great suffering. Her constant cry was,—"O! what I'm suffering! Oh! what suffering! What have I done that I should suffer thus?

(*c*) *Her restlessness and strength.* She was never for one moment at rest. She moved with ease, and any attempts to restrain her movements were difficult, and required considerable effort on the part of the attendants.

(*d*) *Salivation.* A frothy saliva was constantly collecting in her mouth and between her lips. With her left hand she wiped this saliva from her lips, and rubbed it on the edge of the bedding. I particularly remarked that, when her left hand was unoccupied, she did not spit, but cleared away the saliva with her thumb and forefinger, rubbing it on the bedding, or spattering it about, regardless of where it fell. When her left hand was held, and she was not vomiting, she was unceasingly spitting, and such was the quantity discharged, that before I was many minutes beside her my hands and dress were spattered over with the white froth, which issued in profusion from her mouth.

(*e*) *Vomiting.* This was, perhaps, her most distressing symptom. It was almost constant, difficult, painful, straining. The quantity of matter discharged was not great, but was slimy, and of a "coffee grounds" appearance.

(*f*) *Thirst—desire for liquids—and power of swallowing.* She complained of urgent thirst, with burning in her mouth, throat, and stomach. She did not appear to have any dread of liquids, nor did she exhibit any horror when it was proposed that she should drink to quench her burning thirst; on the contrary, she freely discussed what would be the best for her, asked if she might have ginger beer, and showed no annoyance when her aunt tried to jest with her on the love she had shown for so vulgar a beverage as gin and water. When liquid was actually brought to her, the following circumstances were well marked. She would not allow any one to put it into her mouth, but sat up in bed, and most reluctantly, and at last with a quick movement seized the glass. She held it for an instant with a convulsive grasp, her hand quivering and spilling a portion of its contents, and then threw (pitched) the remainder into her mouth. Having emptied it, she cast the glass from her, regardless where it fell, and convulsively clutched her throat with her hand. A rapid, violent, convulsive movement of the throat and neck followed, and the fluid was jerked out by a motion not unlike that by which it was pitched in. The attempt to swallow increased the irritation of the stomach, and she immediately threw herself across the edge of the bed, and renewed her painful straining vomiting. It was very doubtful if she *swallowed* any liquid,—a convulsive closure of the pharynx seemed to arrest it, and eject it with an irresistible and powerful effort. Her existence at this time may be described as consisting of an unceasing round of tossing, complaining, salivating, vomiting, with convulsive movements in her throat, and a sense of suffocation from a never-absent, indestructible ball, to relieve which, she clutched her throat with her hands, as if she would tear out what she could not otherwise rid herself of.

(*g*) Her pulse was at least 150, regular but not strong.

(*h*) The intellectual faculties seemed unimpaired. She moved her tongue and jaw with perfect facility, and articulated quite distinctly and with great volubility. There was no appearance of mania or furor—not the slightest disposition to hurt herself or any one near her; on the contrary, her manner to her attendants was kind. There was no peculiar sound of her voice, nothing which could at all be likened to the barking of a dog.

(*i*) She did not appear in the slightest degree to connect her illness with the bite of her favourite dog, or to have the least suspicion of the nature of her disease. She was early impressed with the idea that she was to die, and told her aunt that her "doctors did not know what was the matter with her, and she wished that her body might be opened after her death." This was said on Tuesday forenoon, before her medical attendants were at all alarmed as to the issue of her illness. She showed no fear of dogs. On the forenoon of the day on which she died, a terrier having come into her bed-room, her aunt ordered it to be put out. She seemed sorry when it left her, and looking after it, said, "Poor Jack!"

Such, so far as I can recollect, are the principal circumstances which I remarked in this poor girl.

The vomiting of coffee-ground matter, with burning in her throat and extreme suffering, being very prominent symptoms, I confess that the suspicion immediately crossed my mind that the case was one of poisoning. I therefore gave directions that the matter ejected should be carefully preserved. I took a part of it with me to Glasgow, and gave it to Dr. R. D. Thomson, who, with great inconvenience to himself, but with that desire to oblige, and to make his high chemical attainments of use to his less qualified brethren, for which he is so much distinguished, immediately ascertained that it contained no acrid inorganic matter. I thought it necessary to communicate my suspicions to the girl's aunt, as well as to her medical attendants, and some circumstances being mentioned which rather seemed to corroborate my views and to implicate our patient, I, with their sanction, indeed at their express desire, stated them to the poor girl herself. She gave them a distinct, emphatic, and circumstantial denial, but showed no anger or irritation that I should entertain them. Her answers and her manner satisfied me on two points already adverted to—that her intellect was quite entire, and that there was a total absence of furor or mania. In a word, that the peculiar symptoms which I witnessed arose from overwhelming bodily suffering, and not from mental aberration.

I remained with her for fully two hours, during which she had two large opiate enemata, and hydrocyanic acid by the mouth. As I have already said, she did not refuse to attempt to swallow, but I doubt very much if any liquid reached her stomach. The medicine was pitched into her mouth, and the glass thrown from her hand, in the manner I have already described.

I had chloroform with me, and after the first opiate enema I proceeded to try it in the usual way. Great difficulty was experienced in getting her to inhale it. Not one instant was she at rest. Her hands being held, and her head steadied, I held the napkin before her face; but her gurgling breathing and livid countenance soon warned me that I must desist. Had I persisted, I am satisfied she would speedily have been suffocated.

I sat beside her, watching the symptoms, for an hour; and seeing that ʒij. laudanum by enema had no effect, and that the exhibition of medicine by the mouth was hopeless, I determined to try the chloroform again. Having laid her upon her back, with her head raised and steadied, and her hands forcibly held, I kept the napkin well saturated with chloroform opposite to, but two or three inches from, her face. She was soon gently under its influence, but never to complete insensibility. The effect on the symptoms was that the vomiting completely ceased, and the restless jactitation disappeared, or was easily controlled; but she did not cease hardly for one instant to speak in the most energetic voluble strain, and the froth continued to issue in considerable quantities from her lips. Her pulse varied, but frequently fell to a little above, sometimes even below, 100. I continued to hold the napkin and watch the effect of the chloroform for about an hour, and having satisfied myself that, whatever the ultimate result might be, the inhalation was alleviating her sufferings, I left her, suggesting to Dr. R. and Mr. H. the propriety of continuing the chloroform as long as they thought they could do so with safety. I returned in the evening, and found that shortly before my arrival she had been relieved by death from her terrible sufferings. Mr. Hislop informed me that the chloroform had been continued with great relief till about half-past four o'clock, when the vomiting and spasms returned, and the pulse became so feeble that it was deemed prudent to omit it. The difficulty of swallowing continued to the last. "About twenty minutes before her death," says Mr. Hislop, "she complained of thirst, and I offered her a glass of gin and water. On taking it in her hand she became violently agitated, and in attempting to carry it to her mouth spilt it on herself and her attendants. She said it was the gin which prevented her swallowing, and I gave her pure water. The result was the same, and I do not think she swallowed a drop of the fluid. She sank rapidly from five o'clock, and died rather suddenly at seven in a violent spasm, which seemed to suffocate her in an instant."

To complete the narrative of this interesting case, I must turn as briefly as possible to its history previous to the 7th June. Mrs. W., the aunt of the patient, had a large dog of the St. Bernard's breed. By all accounts it was a remarkably fine animal, on which she set so high a value that she had refused £20 for it. It was particularly attached to the unfortunate subject of this case, and seemed to take pride in being her attendant and protector. About the 1st of March it became suddenly ill, and a gamekeeper in the neighbourhood pronounced it to be affected with severe inflammation, the consequence of poison maliciously administered to it. He bled it, and directed it to be put into the coach-house, loose, and to be fed upon warm gruel. Immediately before going to bed on the night of the 1st March, Mrs. W. placed a basin of gruel before the dog, and set another at the side of the fire to be ready for it in the morning. About six o'clock she called her niece, and asked her to see how "Neptune" was, and to take him his gruel. The poor girl got out of bed, threw a light shawl loosely over her shoulders, and did as her aunt had desired her. When she was leaving the coach-house the dog endeavoured to rush past her and escape, whereupon she closed the door, shutting herself in with her back towards the dog. He instantly sprang upon her, seized her by the left shoulder blade, sank his tusks into her back, and bit or scratched her on her face. Her aunt, when speaking of this attack, endeavoured to make light of it, but one of the servants assured me that the infuriated dog was "worrying" the poor girl, and that she might have been killed had some one not promptly come to her assistance. When the door was opened the dog made his escape, remained away the greater part of the day, and returned in the afternoon of his own accord. He was again shut up in the coach-house, and became quite furious,—tearing the door, and every piece of wood he could get hold of. He was so bad, that a veterinary surgeon who was asked to see him, was with difficulty permitted to open the door ; and what food and medicine he got subsequently was pushed under it. He died the following morning. No suspicion was entertained of his being rabid. On the contrary, so firmly was Mrs. W. persuaded that he had been poisoned, that she urged the public prosecutor to take up the case, and had the body sent to Dr. Mackinlay in Paisley for examination. This latter step was not taken till the 8th March, by which time the carcase was putrid ; and having been previously cut up by a gamekeeper, admitted of a very imperfect examination. The stomach was examined by Dr. Mackinlay, jun., who kindly informs me that he could discover no poison. Mrs. W. publicly offered a reward of £5 to any one who would assist in discovering the person who administered the supposed poison. No informant appeared.

The above statement can hardly leave a doubt as to this animal having died furiously rabid.

Remarks.—The first question which suggests itself in this, and all similar cases, is, "Was this really hydrophobia?" Now, it does appear to me, that if we are to admit the existence of hydrophobia as a specific disease, we cannot refuse our assent to this being an example of it. The history of the dog, the history of the girl, the peculiarity of the symptoms, and their rapidly fatal termination, appear to me to be as clearly traced, and as well marked, as we could possibly desire. The diagnosis of hydrophobia ought not to be difficult. I have heard experienced surgeons assert, that it so much resembles tetanus that they are in reality the same disease. It has been my misfortune to see too many cases of tetanus, and only this one case of hydrophobia; but symptoms more dissimilar than those of traumatic tetanus, and the sufferings endured by this unfortunate girl, I have never witnessed. It much more resembles acute hysteria. The globus and incessant tossing were well marked; but although the desire to move was irresistible, the motions had no appearance of being involuntary, or associated with insensibility. The attempts at swallowing brought out symptoms such as I have never before seen, and which appeared to me quite diagnostic between this and any other form of disease. The constant discharge of froth from the mouth was also a very peculiar symptom. My first impression was, that the girl was poisoned. The same suspicion had been strongly entertained regarding the dog. I have only seen one case of pertinaciously concealed suicide from arsenic. In it the symptoms closely resembled those of cholera, and were mistaken for that disease. There was no difficulty of swallowing; the cramps were most overpowering; the vomiting and purging profuse; and the "natural characters" of the case very different from those of Miss M. Still I think hydrophobia deserves the careful study of the medical jurists.

The prophylaxis in this case was very imperfect. Mrs. W. sucked the wounds on her niece's back with her mouth, carefully washed them and dressed them with simple domestic remedies. Nothing else was done, and they healed readily.

Period of incubation was about ninty-eight days, certainly beyond the average.

Predisposition and Predisposing Causes.—The girl's temperament was ardent and excitable, with a full share of self-will. In January she was engaged to be married to a youth, who took small-pox and died. She persisted, in spite of all remonstrance, in attending upon him, and there is some reason to believe that she took the disease in a very modified form. In a few months after her first lover's death, she was engaged to be married to a second. Her aunt disapproved of the marriage, and for some time keenly opposed it, but was constrained to give her consent a short time before the symptoms of hydrophobia appeared. Powerful mental emotions very frequently precede the first threatenings of hydrophobia, and this case adds one to the number which make it probable that they may act as predisposing causes. Fear had no share in it. The girl had no suspicion of the nature of her illness, and no dread of dogs.

The stage of *recrudescence,* as it is somewhat barbarously called, was altogether absent in this case. She was not heard to complain of her shoulder or face, and Dr. Aitken's accurate report shows that the cicatrices were perfectly normal.

Morbid Anatomy and Pathology.—The appearances discovered by Dr. Aitken's careful examination confirm the opinion, that congestion and extravasation of blood connected with the spinal chord and mucous and sub-mucous tissues, with prominence of the mucous papillæ, constitute the principal morbid appearances hitherto discovered in hydrophobia. It seems highly probable that these are effects, not causes, of the disease, or if causes, are but fragments of the efficient cause. What that cause is, or how it acts, is still a mystery. That it is a morbid poison I have myself no doubt. That it may remain in the systêm for an indefinite period, and then be thrown off, or be brought into play by secondary causes, seems highly probable. I am not disposed to assign any limit to the period of incubation. The poison of syphilis may lurk in the system undeveloped for years; and why not that of hydrophobia?

Treatment.—The nature of the disease not being suspected until the symptoms were fully developed, the treatment was more directed to meet symptoms than to arrest so fatal a malady as hydrophobia. Still it was sufficiently active, and conducted on unobjectionable general principles. I was anxious to give sedatives and chloroform, especially the latter, a fair trial. Great caution is necessary in using anæsthetics in this disease. If carried so far as to prevent expectoration, the copious secretion of frothy saliva is almost certain to suffocate. As exhibited in this case, chloroform gave great relief; but as a curative it was powerless. I have tried it freely in tetanus with the same effect. It diminishes pain, but cannot cure; indeed, I fear its tendency is rather to shorten than prolong life. After my experience in this case, I should consider all attempts to treat hydrophobia by medicines, given by the mouth as worse than useless. If we look upon the disease as a morbid poison, acting in an unknown manner on the nervous system, our indications will be to allay the consequent irritation, and fight against death with the hope that the poison may exhaust itself before life is extinguished. In this view strong soup, wine and brandy, given by the rectum, with free doses of sedatives exhibited in the same manner, would constitute the most rational treatment. We must not despair of discovering some medicine (possibly some well known medicine applied in a novel manner, as ether by inhalation), which will prevent death until the disease exhaust itself. Perhaps anæsthetics, *early* begun, before the stage of acute spasm and exhaustion have set in, may be of use. All treatment, whose effect is to diminish strength, should be discarded.

Frequency of the disease.—Until within the last three years, hydrophobia was certainly a rare disease in Scotland. In 1849, a case occurred at Dalkeith, and no fewer than three perfectly authenticated cases are recorded in the 'Monthly Journal' as having occurred in the east of Scotland in 1850. When lecturing on this disease during last session, and adverting to these cases, I stated that, so far as I knew, no unequivocal case had been seen in Glasgow or its neighbourhood for at least a quarter of a century, but that, in all probability, twelve months would not pass and leave us in the same boasted immunity. It is remarkable that about the very time that I made that statement the seeds of the disease were being implanted in our unfortunate patient; and it is not much less so, that I should have been called upon to assist in its treatment.—*Monthly Journal of Med. Science, Sept.* 1852, *p.* 233.

10.—*Case of Hydrophobia in the South of France.* By M. Guyon, of Valence.—M. Guyon has communicated to the Société d'Emulation of Paris, the report of a case of hydrophobia, drawn up in a very graphic manner, and presenting some points of interest. The patient was a nailer, about thirty years of age, who was bitten by a little dog, which he had never seen before, and which was quarrelling with his own. No signs of disease were noticed in the strange dog; it was seen for several hours afterwards to play about, gnaw bones, &c., and was subsequently lost sight of.

The medical man who was called in wished to cauterize the three small wounds with the hot iron, but the patient refused, and his surgeon readily yielded, as the dog was supposed to be healthy. Forty days (the period vulgarly believed necessary for incubation) passed away, and the patient now exclaimed that he had been more afraid than hurt, for he had felt uneasy in his mind ever since the accident. About a fortnight after this, the man began to give signs of peevishness, and became quarrelsome and abusive. He soon complained of pain in the vicinity of the pharynx, difficulty of swallowing came on, and the fits of dyspnœa, when water was placed in the mouth, were dreadful.

The surgeon in attendance noticed that the papillæ at the base of the tongue were much enlarged, that the epiglottis became quite erect, and resembled in shape and colour a small cherry. Every time that he succeeded in lowering it, the respiration became easier. There was no horror of water, but a difficulty of swallowing it, the fauces, larynx, and pharynx being highly injected. The spasmodic fits succeeded each other with fearful rapidity, the cellular tissue of the neck and chest became emphysematous, and the patient died asphyxiated the day after the attack.

No post-mortem examination was allowed, but the larynx and posterior portion of the tongue were taken out; they did not present any distinct alterations. M. Guyon appends to the case the following remarks:—

1st. It is clear, judging from the case just related, that a dog can communicate the disease whilst the latter is yet latent; and if it be the salivary secretion which conveys the virus, it does not seem necessary that the animal have a great abundance of it, and foam at the mouth, for the fluid to be contagious, as is vulgarly supposed. 2nd. It has been imagined that fear and apprehension have much influence on the development of hydrophobia; but this case shows that the disease may manifest itself more than a fortnight *after* every sort of apprehension has passed away. 3rd. The peculiar rising and stiffening of the epiglottis noticed in this case, has not been observed before, and would sufficiently explain the laryngeal spasms, which eventually brought on asphyxia. The phenomena of hydrophobia might thus be accounted for, without having recourse to a lesion of the nervous centres, which lesion has, in fact, never been demonstrated by autopsy. 4th. The emphysema of the neck and chest was probably due to the rupture of some pulmonary vesicles during the violent spasms which the patient had experienced. This circumstance shows very clearly that there must be direct communication between the general subcutaneous cellular tissue and the submucous areolar texture of the lungs. 5th. The hypertrophied papillæ at the base of the tongue, which were seen very early in the course of the disease, would explain the sense of pharyngeal constriction of which the patient complained at the very outset. Thus it would finally appear that it is principally in the pharynx and larynx that hydrophobia becomes localized, although it is likely that the disease arises from a virulent infection of the whole organism.—*Lancet, May 29, 1852, p. 521.*

DISEASES OF THE NERVOUS SYSTEM.

11.—CASE OF CHOREA TREATED BY CHLOROFORM.

From Dr. Banks's Clinical Reports.

[The subject of this case was a young gentleman aged twelve, healthy, and of perfectly healthy parents. About three months previous to the attack, he received a severe wrench in the back. Gradually symptoms of chorea manifested themselves. These slowly increased, until the muscles of the entire body seemed to be under the influence of the disease.]

The disease now attained its acme of intensity. To restrain the boy, it became necessary to have four persons, who were from time to time relieved by fresh relays. So violent were the spasmodic movements, that even four strong assistants failed in their attempts to hold him down; and on one occasion he was dashed against his brother with such force as to prostrate him. The little patient now rarely slept, and never for more than half an hour. For four days and nights there was scarcely any intermission.

The skin of his back and wrists was abraded from the attempts to restrain his movements. It is unnecessary to detail *seriatim* the treatment which had been employed; suffice it to say, that remedial measures suggested by the experience of their success in numerous cases, had been fairly put to the test, and the disease nevertheless progressed, not being in the least degree influenced by the means adopted. Opium, so potent an agent in similar cases, received the most full and complete trial, carried to the utmost extent compatible with safety; it failed to induce sleep. Under these circumstances Sir Henry Marsh came to the conclusion that the case was one in which chloroform might be administered; he requested my attendance, and in consultation with Mr. Cusack, it was determined to try the effects of chloroform as a "*dernier ressort*". In the presence of Sir Henry Marsh and Mr. Cusack I proceeded to bring the patient under the influence of this anæsthetic agent. About half a drachm of chloroform was poured upon a pocket handkerchief and held near the nose and mouth; after inhaling nearly two drachms in this manner, the muscular movements had altogether ceased, the right hand being the last part of the body which was reduced to a state of repose. The inhalation of the chloroform was not followed by sleep. After remaining motionless for some time the body became again agitated, but the movements were much less violent and abrupt. On the night after the exhibition of the chloroform, the boy slept for at least five hours, not, however, without frequently awaking. The following day it was found that two persons were without difficulty able to restrain him. The chloroform was given as on the day before, and again he was reduced to a state of complete quietude. A good night's rest followed, but next day he was nearly as unquiet as ever. If he was released for a moment he seemed unhappy, and evidently wished to be restrained. For two nights after there was scarcely any sleep. Chloroform inhalation was again applied

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and persisted in until profound, but calm and apparently natural, sleep was produced, neither lividity of the surface nor stertorous breathing being the consequence. The sleep continued for some hours, and on the following day there was a manifest improvement in all respects. The expression of the countenance was placid and composed; the movements of the limbs continued, but they were not abrupt and violent as they had been; food could now with facility be introduced into the mouth,—up to this time there was great difficulty experienced in feeding him; drink could only be given by means of a sponge, and at intervals small portions of jelly were thrust into his mouth; for the first time for many nights he slept without the aid of chloroform; two grains of sulphate of quina were ordered to be taken every three hours; the legs were now rarely in motion; he could eat, and drink, and speak a little; hitherto, even after there was a decided improvement, he could only speak by monosyllables, and even these were violently jerked out. Such was the condition of the patient on the seventh day from the first exhibition of the chloroform. The improvement from this period was progressive; he gradually acquired the power of feeding himself, and he was soon able to walk about his bed-room. The only involuntary movements which continued were confined to the fingers.

He persisted in the use of sulphate of quina, and after a short time he was sent to the country. The only trace of the disease which remained when he left town soon disappeared, and he now writes to his family that he is "quite well."—*Dublin Quarterly Journal, Aug.* 1852, *p.* 93.

[The best method of introducing the chloroform is by pouring a little of the fluid on a pocket handkerchief, and bringing it near the nose and mouth, allowing free admixture of atmospheric air.]

12.—CASES OF CHOREA.

By Dr. R. B. Todd, F.R.S., &c.

[In the first case related by Dr. Todd, the patient, a boy of 9 years of age, had been quite well until ten weeks before admission into the hospital, when he had been seized with rheumatic fever, which, although relieved by remedies, appeared to terminate ultimately in a sudden attack of choreic symptoms.]

Among the early symptoms which manifested themselves in this way was difficulty of deglutition, which came on and continued for some days prior to the more common and characteristic symptoms. The dysphagia was due partly to a want of full controlling power over the tongue, and partly to a want of due harmony in the action of the pharyngeal muscles. This symptom is peculiarly interesting, from the marked connexion which subsists between this malady and emotional excitement, and deserve special attention in connexion with the pathology of this disease. Previous to his admission he could not walk or help himself in any way, and he was obliged to be washed and dressed by others.

On admission, he was unable to stand for any time without being supported; and if he attempted to walk or run, his limbs would be forcibly jerked about in various directions, and he would fall if not upheld. When in bed his arms and legs would be in constant restless motion, being thrust first to one side and then to the other, with an irregular jactitating movement.

His articulation was very imperfect, and if he attempted to speak he could only utter a few scarcely intelligible words in a whisper. The dysphagia, although much better, was still present.

When he was told to put out his tongue, it was protruded with the sudden thrust so characteristic of chorea, a feature of the disease which you will remember I have often called your attention to as one of its most constant and characteristic symptoms. The whole organ is forcibly and suddenly protruded from the mouth, appearing as if thrust between the teeth, and is retracted sometimes in an equally sudden manner, sometimes more slowly, and as if supported and guided by the teeth. There is also an awkwardness in all the movements, which extends even to the muscles of the face, and, as I said before, all the movements have an exaggerated character. These phenomena are due to a want of power of duly co-ordinating the various voluntary movements of the body, and doubtless depend upon some affection of that portion of the nervous centres in which the co-ordinating faculty is situated.

Another character of these irregular movements, and one which is usually present, although not well marked here, is that they are more evident on one side of the body than on the other; and you will find this feature present in some of the other cases which I shall presently relate to you. Chorea is strictly a one-sided disease, that is, it affects one side more than the other; sometimes one side only is affected; hence it may be classed with cerebral affections, in which the morbid state of one side of the brain will extend to the opposite side of the body. It very rarely happens, even though the irregular movements are observed on both sides, that we cannot detect more movement on one side than the other. The present case, however, seems to be an exception,—it is one of general chorea, and all the limbs seem equally disturbed in their movements.

What is especially interesting in the boy May, is the occurrence of the disease as a sequence of rheumatic fever: the case, too, affords a good example of the heart disease which is so often associated with chorea, and which, in this instance, is clearly dependent upon the rheumatic attack. Upon listening to the chest I easily detected a bellows-sound, which was most distinct at the apex, and became less so as you receded towards the base of the heart; this bellows-sound was synchronous with the systole, which, associated with its situation, showed that it depended upon imperfection of the mitral valve, so as to allow of regurgitation of the blood into the auricle at each contraction of the ventricle; it was also audible at the back, below the left scapula. The imperfection was probably the result of endocarditis affecting the mitral valve and the chordæ tendineæ, creating more or less of shortening of the margins of the valves and contraction of the chords, so as to prevent the perfect apposition of the valves, and, therefore, the complete closure of the auriculo-ventricular opening.

This boy, it appears, was taken ill with symptoms of chorea on May the 8th ; he was, therefore, suffering from the malady for upwards of a fortnight before his admission into the hospital. The treatment to which he has been subjected is sufficiently simple ; it consists merely of splashing with cold water every morning, and, at the same time, feeding him well. The splashing is effected by throwing one or more pailfuls of water over the patient while he is standing in a large tub. This is a plan of treatment which we have followed in several cases which have been in the hospital within the last few months ; and the result of it is, that the boy has much improved in general nutrition, the irregularity of the movements has much diminished, and, at the present time, he is able to walk without assistance,—a result not more favourable than that which attends its adoption in most cases. The bellows-sound, of course, remains, and probably will remain during the boy's life, for the sound depends upon organic imperfection of the valves, and must necessarily be present so long as that imperfection exists.

Another point in the history of this boy, to which I have not yet referred, is, that there is a tendency in his family to rheumatic complaints ; for we find from the history, that his elder brother, aged 14, also had an attack of rheumatic fever about a year ago.

A day or two before the symptoms appeared, this boy was much frightened by his sister, who had covered herself with a white sheet, and appeared before him unexpectedly while he was in bed. There is here, then, that which we so frequently—indeed, I might say, so constantly—observe, namely, the connexion of sudden fright with the origin of these cases. In this case, the fright preceded the symptoms by a day or two ; but, in some other of the cases to which I shall have to direct your attention, a much longer interval occurred between the fright and the manifestation of the symptoms. Although a certain diathesis seems to be always present in cases of chorea, the disease seldom occurs without some sudden and emotional excitement, such as fright.

Case 2.—The next case is that of Sophia Jackson, who was in Lonsdale Ward : she is one of two sisters, both of whom have suffered from chorea. She had always enjoyed good health, with the exception of the occurrence of an attack of rheumatic fever when she was 2½ years of age. About a week before her admission, it was noticed that her hands became fidgetty, and this was especially the case with the right hand. In this case, the one-sided character of the disease is well illustrated, for the irregular movements are almost confined to the right half of the body.

Here, also, we have fright in the history, for we find that, about three weeks before the appearance of the symptoms, she was met and accosted by a drunken man, and was very much frightened at the time ; but you will observe that, in this case, so long an interval as three weeks elapsed between the occurrence of the fright and the manifestation of the characteristic symptoms. Although this interval seems very long, I think we may fairly refer the excitement of the disease to this cause, for, in many instances, you will find that as long or even longer intervals of time have elapsed between the occurrence of the fright and the accession of the malady ; and it is very rare indeed, to meet with a case in which you may not find, on investigating the history, that there has been a fright from some cause or another. I have known the fright occur six weeks before the chorea manifested itself, and I have not the slightest doubt that that fright excited the disease.

The mobility of the right upper extremity continued to increase in our patient, and soon the power of walking became obviously impaired. The peculiar thrust of the tongue was also developed ; and, upon examining the heart soon after her admission, we detected a bellows-sound over the base of the organ, and in the course of the large arteries. This was most probably due to the anæmic state of the patient, and, therefore, in this point differed materially from the bellows-sound present in the first case, for this anæmic-murmur disappeared as soon as the patient recovered. In this case we noticed a very remarkable feature of not unfrequent occurrence, namely, that the urine was of very high specific gravity, and generally contained a deposit of pale lithates, and an excess of urea was found in it several times. The high density of the urine was most marked when the choreic movements were most active, and it was probably due to the increased waste of tissue consequent on the disturbed state of the muscles and nerves.

This patient was ordered an affusion of cold water every morning, and was kept upon a good nutritious diet. The urine was carefully examined from day to day, and seldom fell below 1019, and frequently reached 1030, and once was found to be as high as 1035. As the patient improved in health, the urine fell in specific gravity, but was never found below 1016. Lithate of ammonia was nearly always present, and oxalate of lime was frequently found mixed with it.

It is easier to say what chorea is not, than to describe what its essential nature is. We may regard it as a disease dependent on a debilitated state of the system, which does not in any way arise from an inflammatory or hyperæmic state of any part of the great nervous centres or of other organs. Indeed it is impossible to fix upon any particular organ of the body in which anything like structural lesion exists in cases of chorea. The disease is one of functional disturbance rather than of organic change, and this is borne out by the results of *post-mortem* examinations; for almost without exception we fail to detect, in those cases of chorea which terminate fatally, any morbid alteration in the various organs which could give rise to the phenomena, and in the vast majority of cases we find all the viscera in a perfectly healthy condition, at least so far as we are enabled to make out with the means at present at our disposal.

The structures which are obviously affected in chorea are the nerves and muscles. Doubtless a morbid state of both exists; but it seems most probable that the disturbed state of the muscles is excited and maintained by a deranged state of the nerves and nervous centres. If I were to refer to any particular part of the brain, as more particularly the seat of that disturbance which gives rise to the development of the peculiar phenomena of chorea, it would be to that which may be regarded as the centre of emotion. The remarkable frequency with which the attack of chorea is traceable to fright, as its cause points clearly to this part of the brain, (which has the most extensive connexion with, and influence over, other parts of the nervous system,) as the *primum movens* in the production of choreic convulsions. The chain of phenomena would then be as follows: first, a peculiar diathesis; then a more or less enfeebled nutrition; and, thirdly, a strong mental emotion, which disturbs the centre of emotion, and, through it, deranges the action of more or less of the nervous system and a corresponding portion of the muscular system.

And now as to the treatment. You will readily admit that it is not a little important to have it impressed on the mind of the practitioner, *in limine*, that he has not to combat any inflammatory, or hypersthenic, or disorganizing process. He has simply to improve the condition of the blood, to amend general nutrition, to calm the nervous system, and to infuse tone into the muscular. Of course, if any source of irritation exist it must be removed, such as a deranged state of bowels or worms in the intestinal canal. These causes of irritation, however, exist much less frequently than is generally supposed. Nevertheless they deserve early and close attention; but a system of purgation carried on too long may prove highly pernicious. If worms exist let them be expelled if possible, whether they be regarded as cause, or simply as concomitant. The most common of these are the ascarides, which have their habitat in the rectum, and which may be expelled by enemata of a strong solution of salt in water, or an infusion of quassia.

Attention to the fulfilment of these indications is all that is essential to the cure of the vast majority of the cases of chorea which come before us in practice. But you will find great advantage, in most instances, from the free use of cold water by affusion to the surface of the body. I have treated many cases most successfully, simply by attention to diet and by cold affusion, practised once, twice, or thrice a day, and without the use of drugs of any kind. You will remember that this practice was followed very speedily by marked benefit, in one of the cases which I have detailed to you to-day. The girl had been under tonic treatment for two months prior to her admission, with but little benefit; but on the fourth day of the use of the cold affusion there was a very marked improvement in both the frequency and the violence of the movements; and it was evident that the affusion exercised a decidedly calmative influence upon the nervous system.

Sometimes, however, you will find yourselves baulked in the use of this valuable curative agent, in the case of an irritable, or excitable, or ill-tempered child, or of a nervous, fidgetty mother, or a prejudiced nurse. When you have to contend with these difficulties you must be guided by circumstances, either in giving up the resource or in gradually leading the patient to the full use of it.

I wish to impress upon you that it is to such hygienic treatment as I have described that we must look mainly for the cure of chorea. But there can be no doubt that much good may be obtained from the simultaneous and careful employment of drugs of the tonic class. Of these the metallic tonics rank first, especially iron and zinc, or quinine, or some form of bark, of which you will find the liquor cinchonæ of Mr. Battley one of the most useful preparations.

There are certain after-effects of chorea sometimes met with, which you should remember, and be prepared to treat. A child may be brought to you with one side completely paralysed, or with palsy of a limb, and, upon questioning the friends you will find that the child has been left in this condition after an attack of chorea. Occasionally, this paralytic state occurs as a precursor to the choreic attack, but this is rare. What are you to do in such a state? Does this condition indicate the occurrence of any important lesion? In my experience certainly not, and most of the cases get well in a short time. You should persist in the tonic plan of treatment, and endeavour to improve the health as soon as possible. If, however, the paralysed state should last for any time, it is important to use some means to exercise the paralysed muscles, otherwise they would suffer in nutrition, and a permanently weakened state of the muscles would result. For this purpose, nothing is better than the careful use of galvanism. A gentle and slowly-interrupted current from the battery may be daily transmitted through the paralysed limb or limbs, for a quarter of hour or twenty minutes at a time; and the limbs may be frequently rubbed with the hands, or with a coarse towel or a flesh-brush.

The prognosis of chorea may almost always be favourable, save in those terrible acute and general cases which, by the violence of their movements, rapidly exhaust the powers of life. But, even with such cases as these, we shall be more successful when we can succeed in divesting ourselves of the notion that such symptoms can only arise from a hypersthenic or inflammatory state. I may here mention, by the way, that the cold affusion, well managed, and repeatedly applied at short intervals, has great influence in controlling the convulsions in these cases of general chorea.

It is not so easy to answer a question which is often asked, especially in private practice,—namely, as to the probable duration of a choreic attack. Generally speaking the restoration to health, in such cases, is a slow and tedious process; and, I think, you will find it more so in private life than in hospital practice, because we cannot subject our patients to the same discipline when they are exposed to the excitements and indulgences of home life, as when under the surveillance and directions of strangers in a well-regulated public establishment. It is a very mild case of chorea that will recover in three or four weeks; more frequently they require double that time,—often two or three months, or even five months.—*Med. Times and Gazette, July* 24, 1852, *p.* 79.

13.—ON CHOREA.

By Dr. Merei.

Ammonio-sulphate of copper I regard as the sovereign remedy of chorea. In the records of the Children's Hospital at Pesth, there are 177 cases treated with this substance, 170 of which have been restored to perfect health in the average time of twenty-two days, (the shortest, I think about a fortnight, the longest forty-five days.) The others were cases of the worst kind.

I have seen, in many instances, the complication with chlorosis anæmia. In this latter case we may properly add to the mixture of ammonio-sulphate of copper, (as I will soon bring it before you,) a proportion of the æthereal tincture of iron previously mentioned.—℞. Aquæ menth. pip. oz. iv.; ammonio-sulph. cupri, gr. viii.; tinct. opii simpl. gtt. viii.—xii.; syr. simpl., oz., ss. M.

In this way it will be possible to administer large doses of the remedy, which otherwise easily cause nausea, vomiting, gastric, or intestinal pains, and diarrhœa. The tolerance of it, however, being very different, I almost always commence with one tea-spoonful as a single dose, four or six times a day, and increase the quantity gradually, as far as the idiosyncrasy allows it. Many children, from about nine to fourteen years old, could take of this mixture one table-spoonful four or five times a day, or about four to six grains of it, and continue this during some weeks, whilst in powder we scarcely succeed with more than half a grain per dose. When sickness is produced, we cease with it for one day, and then lessen a little the doses

Iodine is a remedy which, I believe, we may justly call *anti-dyscrasic*, viz., which has the effect of promoting directly the depuration of the organic liquids from some dyscrasic elements. I am far from saying it is a general anti-dyscrasic, nor can I approve of the name of anti-scrofulous, as applied to it, scrofulous "being still a very vague," not to say superficial expression. But I can state the fact, that I have seen *improve*, under its use, *in a proportionally short time*, some hundreds of cases with different complaints, which we usually call scrofulous, and above all, those characterized by impetiginous or eczemato-impetiginous eruptions over the skin, the improvement or cure having been effected in the wards of the Children's Hospital, *without the influence of change of air or baths*, the usual assistants of antimonial and other remedies, regarded as anti-scrofulous, but which, in the hospital at Pesth, without those assistants, did clearly appear inefficacious. I beg to state, that if remedies would be subjected to similar trials in large hospitals, as we perform them in Pesth, with iodine and some other substances, by and by the number of pharmacological fallacies would become reduced. If any one should ask me, in what manner iodine acts as anti-dyscrasic, I am not perfectly sure how to answer. It acts, evidently, in a stimulant way upon the mucous membranes, the kidneys, and upon the liver. The latter action has not been *duly* noticed, though I can assure you that almost all bilious, or what they call hepatic constitutions, are most disagreeably affected even by small doses of iodine, so that these temperaments are seldom allowed to pass even through a mild course of iodide of potassium. Dyspepsy, for bilious vomiting, is a frequent effect, but I never observed bilious diarrhœa. The most obvious effect of it, however, is to produce irritation in the mucous of the eyes and the nose; connected in higher degrees, with fever and headache; it acts decidedly upon the urinary apparatus, commonly increasing the secretion of urine, by which more or less of it is again carried out of the body. Its action upon the skin is the latest, and appears as consecutive to its stimulant action upon the mucous membranes. Iodine fever resembles catarrhal fever, and is frequently followed by perspiration. Salivation, and some other effects of it, are less constant and important.

In some individuals, but very seldom in young children, we have observed a slight diminution of the testes; in some ladies the glandula mammaria have been diminished. These effects will sooner happen under long continued small doses than under large ones, when they will excite febrile reaction.

I have observed that the more there was of iodine fever, with consequent crisis, the more evident was the anti-dyscrasic effect of this remedy.

In the clinical case-book of the children's hospital of Pesth there is a considerable number of different affections of bones, of one or more year's standing, in scrofulo-impetiginous children, which, under the phenomena of iodine reaction, have been cured in the short time of one to three months.

After all that I have seen, it seems to me that *the anti-dyscrasic action of iodine is not a directly chemical one, like that of iron in chlorosis, but appears to depend upon producing a sort of disturbance, the reaction upon which is followed by the curative effect.* From this it seems to follow that whilst in chlorosis we must give iron in frequently-repeated small doses, iodine must be administered in the opposite way. Many cases, however, may be improved or cured without fever. Fever has also its minimum in the body, which is scarcely perceptible.

From the above statements it results that iodine, in order to become a strong curative power, requires a constitution fit for its reception and reaction upon it. Now full, phlegmatic, or lymphatic constitutions bear it the best, the nervous less, the bilious least of all. Atrophy and anæmia must be removed before we commence with iodine. And when we consider that atrophy is the most direct indication for cod-liver oil, and the most direct counter-indication for iodine, it becomes clear that these remedies act in an opposite way, and that cod-liver oil owes not its effects to its infinitesimal part of iodine.

Now, I should feel very glad were I able to point out to you and describe more exactly the cases in which you may expect advantages from iodine. But, without having before us the patients, it is scarcely possible to give you exact directions.

Comparatively full phlegmatic constitutions, affected with eczema-impetiginosum, or even with caries, supported, in general, the strongest iodine treatment, and had the best results of it. This is one of the best results we had in the Children's Hospital with that remedy. On the contrary, prurigo, impetigo, achor, lupus, scrofulous, or tuberculous infiltration of the glands, do not yield to the iodine treatment. Catarrho-scrofulous conjunctivitis also excludes the use of iodine, because under its action the inflammatory character of this affection almost constantly increases long before an anti-dyscrasic effect could be obtained. On the contrary, I frequently succeeded with it in torpid forms of swelling of the meibomian glands.

If a dyscrasic local affection, which we think proper to be successfully treated with iodine, does occur in an emaciated child, we must, before its use, improve the constitution with cod-liver oil; if the subject is anæmic a course of iron must precede. In children of a nervous temperament, or where we encounter a great disposition to catarrhal irritation of the intestines, we assist the iodine treatment with opium or Dover's powders.—*Provincial Med. and Surgical Journal, May* 26, 1852, *p.* 257.

14.—ON STAMMERING.

By Professor Dunglison. (Reported by Dr. J. Aitken Meigs).

[In stammering, the consonants, especially those known as explosives—as *b*, *d*, *t*, *g*, *k*, &c., are most difficult to pronounce, in consequence of their being dependent upon an ever-varying disposition and arrangement of the vocal tube. Professor Dunglison, in his clinical lecture, remarks:]

Much difference of sentiment has existed in regard to the essential cause of stammering; and views have occasionally been entertained, which are certainly far from tenable. By some of the best physiologists, all the varieties have been referred to a spasmodic closure of the glottis producing a sudden arrestation of the issuing column of air. That this is not always the cause of the affection, however, is shown, as we shall see, by the cases before us. The great fault lies in the spasmodic action of certain of the muscles concerned in the production of the voice, and in articulation. Often, as in chorea or St. Vitus's dance, the slightest agitation serves to aggravate, in the most painful degree, the abnormal action. Indeed, the affection may not improperly be—as it has been—called, "Chorea" or "St. Vitus's dance" of the voice. The stammering, on attempting to enunciate a word or syllable, experiences difficulty or resistance at the commencment, and having but an imperfect control over the voluntary muscles of the vocal apparatus, he at once loses all confidence in his ability to produce the sound required, and there consequently results an irregular or spasmodic action of those muscles, which, for a longer or shorter period and determined by the degree of spasm, effectually prevents enunciation. In the case of the explosive consonants, the total interruption of the breath, and the badly regulated and insufficient volition, give occasion to the most painful spasmodic efforts on the part of the muscles more immediately concerned in articulation. This may even be extended to the whole body, which is thrown into a most distressing state of agitation to overcome the obstacle. At length the spasm ceases with the accomplishment of the act of expiration. It will now, therefore, be understood, why the complete interruption to expiration in the enunciation of the explosive consonants should be the most common phenomenon observed in stammerers. In the case, however, of the continuous consonants, an additional phenomenon occurs, in the sound being prolonged by spastic action for a much longer time than necessary.

Mr. Bates, who is an ingenious and liberal mechanic, has been studying, for some time, the nature and treatment to these distressing impediments to speech, and, as I remarked, has been kind enough to bring here several of the persons under his care, that you may see me examine them, and hear me explain the mechanical contrivances which he employs to obviate them. He was himself, for a long time, a most intense sufferer, and, in consequence, had his attention earnestly and assiduously directed to the discovery of some means of relief. He has overcome the difficulty in himself, and has happily succeeded in enabling others to do the same. In the three cases now before you, and which are at present under his guidance, the spasm manifestly affects different muscles; and hence, although in each person the same amount of difficulty is perhaps experienced in enunciation, the difficulty may concern different sets of letters. Thus the resistance may more prominently affect the labails, dento-labials, linguo-dentals, linguo-palatals, or gutturals; and hence the value of the physiological knowledge which teaches us the intimate mode of their production.

[The patients were now brought, *seriatim*, before the class, and made to read words and syllables commencing with different consonants, especially with those of the explosive class.]

In the *first case*, (R. G., æt. 26), the utterance of the explosive letters is arrested, and accompanied by a singular and sudden spasmodic protrusion of the lower lip. In the attempt to articulate such words as *Boston*, *bunch*, *boat*, *pill*, *pant*, *Pope*, &c., an arrestation of the sounding breath occurs, accompanied by such protrusion, and the patient is thus rendered incapable of completing or perfecting the sound.

In the *second case*, (R. S., æt. 34), the voice is arrested, and there is a sudden and energetic contraction of the lips. The voice cannot escape from the mouth, and the difficulty here is with those words which contain the dentals, as *Thomas*, *doctor*, *stone*, *&c.*

In the *third case*, (D. D., æt. 25), there is spasm of the muscles that close the glottis, so that on attempting to pronounce the gutturals in such words as *grey*, *goose*, *great*, *king*, *court*, &c., the glottis is quickly and spasmodically closed, and the current of air prevented from issuing, except by jerks.

The great object to be accomplished in the treatment of these cases, is to overcome the proximate cause—the neurosis, or irregularity of innervation, indicated by the spastic condition of the muscular apparatus brought into play in the process of articulation. To effect this, it appeared to Mr. Bates, and it was confirmed by experiments instituted on himself whilst suffering under the infirmity, that if a plan could be imagined to prevent the total interruption of expiration, which occurs in these cases, the patient would feel confidence in his being able to elicit the particular sound, and in this manner the spasmodic efforts might be prevented. He accordingly invented several well devised instruments and arrangements, adapted to the different varieties of stammering; either by preventing the spasmodic action of the muscles concerned, or by restraining, by appropriate pressure, the irregular contractions of the muscles. For example, when the lower lip and chin, in the *first case*, were confined by means of a simple broad bandage, like the one I show you, and pressure was thus exerted upon the spasmodically contracted musculus orbicularis oris of the lower lip, so as to prevent the protrusion of the lips, the letters, which were such stumbling blocks before, could be distinctly enunciated, and with a daily decreasing amount of hesitation.

For the *second case,* Mr. Bates has contrived, as you here see, a small plate, fitting closely to the palate, and affording attachment to a light narrow tube, the posterior end of which opens into the mouth, looking towards the fauces, whilst the anterior projects between the lips. By this contrivance the current of air is made to be in part continuous, and the patient finds, to his surprise and delight, that he can produce the sound without any limitation other than his will.

The subject of the *third case* has been materially benefited, and is, indeed, in a fair way to be entirely cured of his unfortunate habit, by means of a neckerchief or cravat, in which is a little spring, pressing—as you observe—directly upon the projection of the thyroid cartilage, in such a manner as to relax the rima glottidis, by approximating the thyroid to the arytenoid cartilages; thus permitting the exit of air and preventing the spasmodic action of the muscles that close the glottis. The spring is so regulated, that the amount of pressure upon the thyroid cartilage can be increased or diminished, as occasion may require.

[The effects of these different forms of apparatus were exhibited on the stammerers before the glass; and the action of each was clearly manifested.]

By such contrivances, which are simple, and adapted to the accomplishment of the object in view, Mr. Bates succeeds in effecting a great desideratum,—the *restoration of self-confidence,*—the want of which is a main obstacle to improvement in all such cases; for as soon as the patient becomes thoroughly and practically convinced that there is no difference between his vocal organs and those of his friends, whom he hears speak without difficulty or hesitation, he becomes inspired with confidence in himself, and his exertions are thenceforth the commencement of his restoration, Let it be, however, distinctly understood—and no one is more convinced of this truth than Mr. Bates himself—that no apparatus of this, or any kind, can, of itself, accomplish a cure. Nothing but a thorough system of practice and discipline, persevered in for a considerable period, can effect the work of restoration. The instrument merely infuses confidence. Withdraw it, and the case is left in the same condition as before. I can have no doubt, however, that with such a system, the stammerer may be amazingly benefited by the course pursued by Mr. Bates; but he must be thoroughly impressed with the fact, that time is one of the elements that must enter into his calculations, and that no plan can succeed without it.—*Philadelphia Medical Examiner, July,* 1852, *p.* 430.

15.—ON THE RELATION OF LARYNGISMUS TO EPILEPSY.

By Dr. E. Watson, A.M., Glasgow.

[After commenting on Dr. Marshall Hall's treatment of epilepsy by tracheotomy, Dr. Watson proposes, instead, the application of a solution of nitrate of silver (varying in strength with the requirements of the case) to the glottis of the epileptic patient, for the same reason as he would apply it in a severe attack of spasmodic croup,—viz., to allay the nervous excitability of the part in question. Dr. Watson proceeds to relate the following case.]

Early in January of this year (1852), I was called to a young lady, who had for several years suffered very frequent attacks of epilepsy, and when I first saw her, she had but very short and uncertain intervals between the fits. These were very severe, and presented the usual characters of the disease in its most marked form.

Her bowels were thoroughly cleared out with croton-oil, and the cold bath was used with good effect. The fits became less frequent, though almost equally severe when they did occur. The valerianate of zinc and galvanism were then added to the cold bath, and due regulation of the bowels. I now, moreover. began to touch the glottis with a solution of one scruple of nitrate of silver in an ounce of water. This was continued regularly every day for a fortnight, and afterwards for some weeks with longer intervals between the applications. By the middle of February, the fits had quite changed their character, being more like short faints than the regular convulsive paroxysms; and they have since then occurred very much less frequently. The patient has greatly improved in general health, and in activity of mind; and she has lost much of that dread of the disease which formerly rendered her existence miserable.

It is true that this is but a single instance, and that the present favourable state of the patient may not be permanent. Yet seeing that the remedy has, even in one case, been followed by such admirable results, that it is in itself most innocent, and so reasonable in theory, surely I am warranted in suggesting it for trial by my fellow practitioners. Nor ought it to be forgotten that, although I can only at present furnish one instance of its efficacy in curing epileptic laryngismus, abundance of proof might be adduced, to show its power to subdue laryngismus in other cases. In those of hooping cough alone, since I first proposed this plan in the 'Edinburgh Monthly Journal of Medical Science' for 1849, I have treated to a conclusion some fifty-seven cases; and M. Joubert, of Cherion, has treated sixty-eight. Now, in all these hundred and twenty-five cases of hooping cough, the laryngismus was speedily cured, except in *eight* cases, which resisted the treatment, but were none the worse for it; for not one death occurred among them.—*London Journal of Medicine, July,* 1852, *p.* 642.

16.—*Chloroform in Delirium Tremens.* By W. Rogan, Esq., M.B., Londonderry.—[On the 13th of June last, this gentleman was called to visit a well-marked case of delirium tremens. He says]

I immediately gave him a drachm of laudanum in half a glass of brandy and directed it to be repeated every hour till he slept; he was also to be well supplied with strong beef tea. He took three doses of the medicine without its causing any tendency to sleep or abatement of the delirium. His pupils were now so much contracted, that I hesitated to give more opium, and determined to try chloroform. I administered it on a handkerchief, without any opposition from the patient, who seemed amused by the process. In a short time he was under its influence, lying quiet, and breathing naturally. I kept up its effects for about three quarters of an hour, and then withdrew it. He roused up shortly after, quiet in manner, and evidently better. In about ten minutes, he fell asleep, and slept for seven hours without intermission. When he awoke he was quite sensible, and much refreshed. He took some food, and again slept for some hours longer, and awoke quiet well, and able to return to his work. The above is a good example of the benefit of chloroform after opium has been pushed as far as seems compatible with safety.—*Med. Times and Gazette, Aug.* 14, 1852, *p.* 174.

17.—*On the Treatment of Facial Neuralgia.*—M. CAZENAVE informs us (Revue Medico-Chirurgicale) that he has had marked success in removing the pains of hemicrania and facial neuralgia by means of the following pomade:—

Pure chloroform, dr. iv.
Cyanide of potassium, dr. iijss.
Axunge, oz. iij.
Wax sufficient to give consistence.

M. Cazenave professes to have tried the cyanide of potassium alone, without any benefit, and therefore concludes that it is this particular combination which is so valuable. The mode of using it is to rub ointment, the size of a pigeon's egg, into the scalp, after which the head is to be covered with an oiled-skin cap. The inunction is to be repeated according to circumstances. In facial neuralgia it is rubbed in over the affected nerve.—*Provincial Medical and Surgical Journal, July* 21, 1852, *p.* 380.

DISEASES OF THE ORGANS OF CIRCULATION.

18.—ON SOME OF THE PRINCIPAL EFFECTS RESULTING FROM THE DETACHMENT OF FIBRINOUS DEPOSITS FROM THE INTERIOR OF THE HEART, AND THEIR MIXTURE WITH THE CIRCULATING BLOOD.

By DR. WILLIAM SENHOUSE KIRKES.

[The following observations on the above subject were communicated by Dr. Burrows, to the Royal Medical and Chirurgical Society.]

As an introduction to the subject, the author observed that it was a a clearly established fact, that the fibrinous principle of the blood might, under certain circumstances, separate from the circulating fluid, and be deposited within the vascular system, especially on the valves of the heart. The forms of fibrinous concretions to which the following observations especially applied, were, first the masses usually described as Laennec's globular excrescences; and secondly, the granular or warty growths adhering to the valves, and presenting innumerable varieties, from mere granules to large irregular fungous or cauliflower excrescences projecting into the cavities of the heart. These growths, when once formed, whatever might be their origin, were full of peril, and would often remain so, long after the circumstances which gave rise to them had passed away. When of large size, or loosely adherent, they might at any time be detached from the valves, and conveyed with the circulating blood, until arrested within some arterial canal, which might thus become completely plugged up, and the supply of blood to an important part be suddenly cut off, from which serious, if not fatal results would ensue; or, smaller masses might be detached, and pass on into arteries of much less size, or even into the capillaries, whence congestion, followed by stagnation and coagulation of the blood, and all the consequent changes such coagulated blood is liable to undergo in the living body, would necessarily follow. Many singular morbid appearances observed in internal organs, and not well accounted for, were probably brought about in this manner. Again, the masses of fibrine might soften, break up, and discharge the finely granular material resulting from their disintegration into the circulating blood, and, contaminating this fluid, might excite symptoms very similar to those observed in phlebitis, typhus, and other analogous blood diseases. Thus the fibrinous material detached from the valves, or any other part of the interior of the heart, might be the cause of serious secondary mischief. The parts of the vascular system in which these transmitted masses of fibrine might be found, would in great measure depend upon whether they were detached from the right or left cavities of the heart. Thus, if from the left, they would pass into the aorta and its subdivisions, and would be arrested in any of the systemic arteries or their ramifications, and especially into those organs which receive large quantities of blood direct from the left side of the heart, as the brain, spleen, and kidneys: on the contrary, if escaping from the right cavities, the lungs would necessarily become the primary, if not the exclusive, seat of their ultimate deposition. A division of the subject being thus naturally formed, the author proposes to consider the subject, first, as to the remote effects resulting from the separation of fibrinous deposits from the valves or cavities of the left side, and secondly, as to the corresponding effects produced by the detachment of like deposits from the valves or cavities of the right side of the heart. The author then proceeded to elucidate the first branch of the subject, in whch masses of some magnitude were detached from the left side, and arrested in an arterial channel of notable size. This pathological fact was illustrated by three cases, in many respects identical; for, in each, death appeared to ensue from softening of the brain consequent on obstruction in one of the principal cerebral arteries by a mass of fibrinous material, apparently detached from growths on the left valves. The first case was that of a female, aged thirty-four, of pale and delicate aspect. She had suffered from rheumatic pains, and there was a loud systolic murmur heard over the entire cardiac region. While under treatment for these symptoms she suddenly fell back as if fainting. She was found speechless, with partial hemiplegia of the left side, but there was no loss of consciousness; the hemiplegia increased, involved the face and limbs, and gradually became complete in regard to motion; but sensation remained unimpaired. These symptoms lasted five days, when she quietly died. The post-mortem examination developed much congestion of the pia mater, amounting in some places, to ecchymosis. The right corpus striatum was softened to an extreme degree—being reduced to a dirty, greyish-white pulp. In the posterior lobe of the right cerebral hemisphere was a similar spot of pale softening. The right middle cerebral artery, just at its commencement, was plugged up by a small nodule of firm whitish, fibrinous-looking substance, not adhering to the wall, but rendering the canal almost impervious. The vessels of the brain were generally healthy, except a yellow spot or two in the coats of those at the base of the brain. The heart was enlarged; several broad white patches externally. The right valves were healthy, so also were the aorta; but the mitral valve was much diseased, the auricular surface being beset with large warty excrescences of adherent blood-stained fibrine. The right common iliac artery, about an inch above the origin of its internal branch, was blocked up by a firm, pale, laminated coagulum, which extended into the internal iliac. The pleuræ were adherent in places; liver and intestinal canal healthy; spleen large, pale, and soft, and contained a yellowish-white, cheesy substance. The kidneys were pale, rough, and granular; within the cortex of the right were several large masses of yellow deposit, surrounded by patches of redness. Death had resulted in this case from the softening of a large portion of the right side of the brain, which the author considered to have arisen from an imperfect supply of blood, consequent on the middle cerebral artery of the same side being obstructed by a plug of fibrine. The author then discussed the sufficiency of such an obstruction to produce the effects ascribed to it, and he brought forward many examples showing that atrophy and disorganization usually resulted from any circumstance which materially impeded, or entirely cut off, the supply of blood to a part. The author then directed attention to the probable source of the fibrinous plug found in the middle cerebral artery. The suddenness of the cerebral symptoms rendered it probable that the blocking up of the artery was equally sudden, and not the result of gradual coagulation of the blood within the vessel. The absence of all local mischief in the coats of the artery at the point of obstruction, as well as elsewhere, pointed to some other than local origin for the clot; and the author, at the time of the examination, formed the opinion, that a part of the fibrinous deposit on the mitral valve had become detached, and carried by the stream of blood, until arrested at the angle whence the middle cerebral proceeded. This explanation suited equally for the plug found in the common iliac; for it was quite conceivable that portions of the loosely adherent fibrine might be easily detached by the stream of blood washing over the mitral valve, and when once admitted into the circulating current, they would only be arrested by arriving at a vessel too small to allow their transit along its canal. Two other cases were described by the author, possessing many interesting points of resemblance: one, a female, aged twenty-four; the other, a male of the same age. Both were admitted into the hospital with hemiplegia of the left side; each had heart disease, indicated by a loud systolic murmur. The post-mortem examinations revealed the following morbid appearances common to both:—

Softening of a limited portion of the brain, producing death by hemiplegia; obliteration of the cerebral artery supplying the softened part; coagula in one of the iliac arteries; fibrinous deposits in the kidneys and spleen; and the presence of fibrinous warty excrescences on the valves of the left side of the heart. So many and such rare features of resemblance could not fail to demonstrate a very close connexion between the several morbid appearances so exactly reproduced in each case. The author believed that these three cases satisfactorily established the two following conclusions—1st, that softening of a portion of the brain, with attendant loss of function, might result from obstruction of a main cerebral artery by the lodgment of a plug of fibrine within its canal; 2ndly, that the foreign substance thus obstructing the vessel was probably not formed there, but was derived directly from warty growths situated on the left valves of the heart. The author thought it not improbable, although in the absence of direct proof it was but supposition, till further investigation confirmed these facts, that many cases of partial and temporary paralysis suddenly ensuing in one or more limbs of young persons, especially if accompanied with signs of cardiac disease, might be due to interruption of a proper supply of nutriment to the brain by the temporary plugging up of a principal cerebral artery by fibrine, detached from a diseased valve on the left side of the heart. Other arterial branches, besides those of the base of the brain, might arrest these fibrinous deposits derived from the valves of the heart. In cases 1 and 2, coagula were found in the iliac and femoral arteries; and in case 3, in the renal, The author thought that many specimens found in museums, and supposed to illustrate the spontaneous coagulation of the blood, or the deposition of fibrine within a limited portion of an arterial trunk, were probably to be referred to the same cardiac origin, and he illustrated the point by reference to a preparation in the museum of St. Bartholomew's Hospital. The second subject of inquiry consisted of an examination into the effects produced by smaller portions of fibrine detached in a similar manner, but arrested in the minute arterial branches, or even in the capillaries. The author thought that the singular masses of yellow fibrinous substance found in the spleen and kidneys, and other organs, and hitherto described as "capillary phlebitis," "metastasis," or "fibrinous deposits," were derived from this cause. Out of twenty-one cases in which the author had observed these deposits in the spleen and kidneys, or other parts deriving blood directly from the left side of the heart, in nineteen there was disease of the valves, or of the interior of the left side of the heart. In fourteen of these there were fibrinous growths on the surface of the left valves; in the remaining five there was simple mention of valvular disease. The author thought that the mere fact of so large a number of cases of so-called "capillary phlebitis" being associated with the presence of fibrinous deposit on the valves of the heart, suggested a very close relation between the two morbid states. The author than entered upon the third branch of this part of the subject, concerning the series of effects which might result from the introduction of fibrinous particles into the circulating blood, manifesting phenomena indicative of the existence of a morbid poison in that fluid. A case was related of a youth, aged fourteen, admitted into the hospital with obscure typhoid symptoms, the surface of the body being covered with petechiæ. Delirium, with much febrile prostration, followed; he became subsequently comatose, and died. Upon examination of the body, the surface was found covered with petechiæ. The pia mater was infiltrated with what seemed recently effused blood. The surface of the brain thus presented a blotchy appearance, and amid these spots were yellow-coloured patches of various size; some were of a greenish-yellow hue, and had the appearance of being smeared over with pus. The brain was unduly congested, and some ecchymosis was near the surface; the cerebral arteries and sinuses healthy; several petechial spots on the surface of the heart, as well as in the cavities; and on the auricular surface of the mitral valve some white fibrinous vegetations, very soft and friable; a like deposit on the aortic valves, with evidence of ulceration; several yellow masses of fibrinous deposit on surface of spleen; cortical part of the kidney covered with minute petechial spots, in the centre of which was a buff-coloured dot; several large yellowish blotches extended deep into the substance of the cortex. The intestinal mucous surface was covered with petechial spots, which were apparent also on the mucous membrane of the bladder, pharynx, œsophagus, stomach, larynx, and trachea. The author considered the mystery of this case cleared up by the post-mortem examination. The attack had been ushered in by a severe pain in the right groin which was rheumatic; then ensued rheumatic inflammation of the mitral and aortic valves, with ulceration of the latter, and deposition of fibrine. From these deposits portions had probably separated during life, and were transmitted with the blood to all parts of the body, and being arrested in the capillary networks and smaller arteries, produced the various petechial and buff-coloured spots above described.

The second part of the paper related to the effects which might result from the detachment of fibrinous deposits from the right valves of the heart. Reference was made by the author to a paper on the Formation of Coagula in the Pulmonary Artery, by Mr. Paget, published in the ‘Transactions of the Society,’ as well as to a specimen in the museum of St. Bartholomew's Hospital, in which there was deposition of fibrine on each of the pulmonary valves, with old coagula filling many of the branches of the pulmonary artery. In this case several large, solid, fibrinous masses were found in the substance of the lungs, presenting appearances not unlike portions of old pulmonary apoplexy. Lastly, the author recapitulated the principal points which he was desirous of establishing, viz.,—1st. That fibrinous concretions in the valves of the heart admit of being readily detached during life. 2ndly. That if detached and transmitted in large masses, they may suddenly block up a large artery, and thus cut off the supply of blood to an important part; if in smaller masses, they might be arrested by vessels of smaller size, and give rise to various morbid appearances in internal organs; or the particles mingled with the blood might be but the *débris* of softened fibrine, yet with power to produce a poisoned state of the blood, and bring on typhoid or phlebitic symptoms. 3rdly. That the effects produced and the organs affected would be in great measure determined by the side of the heart from which the fibrinous material had been detached: if from the right side, the lungs would bear the brunt of the secondary mischief; but if, as was most commonly the case, the left valves were the source, the mischief would be more widely spread, and might fall on any part, but especially on those organs which were largely and directly supplied with blood from the left side of the heart, as the brain, spleen, or kidneys.—*Lancet, June* 5, 1852, *p.* 542.

19.—*Case of Death from the Formation of a Fibrinous Concretion in the Heart.* By DR. WALTER GARSTANG, Saddleworth.—[The patient in this case was aged 64. He was attacked with erysipelas of the head and face, combined with symptoms of congestion of the liver. From these he gradually recovered, though the system did not seem to regain strength, and the heart's action was very feeble. Five weeks after the first attack he caught a slight cold, and a mild repetition of the erysipelas, and hepatic derangement appeared.]

These symptoms, however, were checked as speedily as before; the appetite returned, and digestion seemed to be easily accomplished; and yet, with all these favourable appearances, his strength failed, the action of the heart and the respiratory movements gradually grew feebler, and at length, without any sign of pulmonary, cerebral, or abdominal disease, these asthenic symptoms slowly terminated in death, just eleven weeks after the first commencement of the erysipelatous attack.

Post-mortem.—With the exception of a slight enlargement of the liver, we could find no organ exhibiting structural change. The lungs were perfectly healthy. Upon opening the heart, however, we discovered what, in my opinion, fully accounts for the gradual dissolution; a fibrinous mass filled both its right cavities, and sent up large and long branches into the pulmonary artery and its ramifications. The concretion was firm and white, and had an attachment to the walls of the heart.

Remarks.—I have but few remarks to make on this interesting case, and I should probably never have thought of publishing it at all, had not my attention been forcibly drawn, during the last few months, to certain observations which have been made before the Medical Society of London, by Mr. B. W. Richardson, "On the Fibrinous Element of the Blood," and which have been reported in the columns of 'The Lancet.' I find that in a paper read by Mr. Richardson in November last, he thus observes: "Lastly, in cases of asthenia, where fibrinous concretions exist in the heart, the very cessation of the act of life may be owing to their presence and gradual increase, the central organ of the circulation becoming literally choked by them." In January, again, the same author briefly alluded to this subject, and produced a pathological specimen which strongly supported his views; and, lastly, in the month of March, on exhibiting another heart in which a fibrinous clot was found, he gave more enlarged views on the matter, and threw out the idea, that, during those diseases which are known to be attended with an abnormal quantity of fibrine in the blood, it may be that some of the overplus of fibrine is deposited on the elevated structures of the moving heart; and he concluded by saying that, "In all inflammatory cases marked by great super-fibrination of the blood, and which end by what is called sinking, it would be interesting to learn how far similar concretions in the heart may be concerned in bringing about the sinking state."

Now, without wishing to mention the many theoretical points which Mr. Richardson and other physiologists enter into with reference to the formation of fibrine, &c., &c., I cannot but observe, that the case which I have related above affords striking testimony as to the correctness of the opinions from which I have just quoted. My patient had suffered from erysipelas, a disease in which the blood is always super-fibrinized: he sank in the most gradual manner, and the autopsy revealed no cause for the sinking, except (what was surely sufficient) a large fibrinous concretion in the heart.

Of course the narration of a single case does not go far to establish any new opinion, but perhaps it may excite others to turn their attention to the same subject. I have been puzzled, over and over again, at seeing patients gradually sink into death, after some slight disorder, with no evident disease that could account for such a serious result. Now, if any explanation so simple as that given by Mr. Richardson should prove, after further research, to account for some of these occurrences, a great step in the practice of medicine will certainly have been made.—*Med. Times and Gazette, Sept.* 11, 1852, *p.* 259.

20.—ON FIBRINOUS DEPOSITS ON THE LINING MEMBRANE OF VEINS.

By Henry Lee, Esq.

Simple inflammation of the veins—that is to say, inflammation commencing in the coats of the veins—is regarded by the author as a very rare disease. The lateral lining of veins especially would appear to be as little susceptible of inflammation as any structure in the body. The large number of instances of phlebitis met with in surgical works, and occurring in daily practice, are regarded by the author as depending upon and as being excited by, a vitiated condition of the blood. This opinion is principally supported by the two following facts: first, that in every case of so-called inflammation of the veins, the blood will be found to have coagulated in the vessels; and secondly, that where such coagulation does not take place, no inflammation will be produced. Continental writers of the highest reputation have, indeed, mentioned the concentric layers of lymph which are secreted as the result of inflammation in the interior of veins; and English writers, whose names carry with them the greatest authority, have described the adhesion of the opposed sides of veins by lymph secreted from the capillaries under a state of inflammation. The advocates of this view have particularly referred to an experiment by M. Gendrin, in which he mentions, that, by introducing irritating substances into the arteries and veins, he obtained large deposits of lymph upon their interior. The author on the contrary, having found that inflammation of the coats of the veins only occurred in cases where the blood has previously coagulated in them, was induced to believe that the deposit found in the veins might be derived directly from the blood. M. Gendrin's experiment was therefore repeated, precautions being taken to exclude all blood from the vessel; and it was found that under these circumstances no lymph was effused in the vein. The lining membrane of the veins does not contain any blood-vessels of its own, nor does it require any, being in direct contact with the blood. It appears reasonable to suppose, that, under such circumstances, it would not secrete lymph, and the experiments and observation of the author lead him to this conclusion. The lining membrane of a vein, the outer coats of which are inflamed, may undergo various changes, or may be disintegrated, and cast off into the cavity of the vessel. Lymph and pus may then be secreted into the interior of the canal; but this can only occur in the latter stages of the disease. The readiness with which some morbid poisons produce coagulation of the blood, and the constancy with which such coagulation (indicated by the cord-like induration of of the vessel) is found to precede the other symptoms of inflammation, lead to the conclusion, that a vitiated condition of the blood is the common cause of phlebitis. Under such circumstances, although the irritation produced is caused by the morbid matter detained in the vein, yet the inflammation is at first manifest in the surrounding parts. The cellular tissue becomes distended with serum; the cellular coat of the vein then becomes thickened, red and inflamed; and, finally, the changes which have been noticed extend to the lining membrane. The effects of inflammation thus are shown to extend to, and not from, the internal surface of veins. M. Cruveilhier indeed regards the coagulation of blood in a vessel as the effect of inflammation previously existing. But the author has satisfied himself, that if blood be prevented from stagnating in a vein, no change will be thereby produced in its lining membrane. The inflammation is not, therefore, propagated by continuity of surface, as has been generally supposed, but by the stagnation, in different parts, of vitiated blood. Coagulation of the blood would therefore appear to be the cause, and not the effect of inflammation of veins. This view is further supported by the fact, that simple adhesive inflammation of a vein will not produce coagulation of its contents. A preparation was exhibited, showing the effects of a ligature upon a vein twenty-four hours before death. No coagulation of the blood, nor deposit of fibrine on the lining membrane, had in this case taken place. The coats of the vein were thrown into folds, and a white band marked the situation of the ligature; but the projecting folds of the lining membrane presented their natural, smooth, polished, and lubricated appearance. Healthy venous blood will remain fluid for days, when confined in a vein by a ligature. In this respect there is a contrast between a vein and an artery. In the latter case, the internal coats are divided, and the blood, coming in contact with the divided edges, immediately coagulates. In the vein, on the contrary, the lining membrane is not divided, and therefore the blood remains in contact only with the natural lining of the vessel. Cases in which a small quantity of pus has been introduced into a vein, afford the strongest contrast to those in which the coats have been mechanically irritated. In the latter case, no coagulum will form, or one only sufficient to unite any lesion there may be of the lining membrane. In the former, on the contrary, extensive fibrinous plugs will occupy the vessels. These will sometimes occupy the whole diameter of the vein, and become firmly attached to its sides; at other times, the outer layers only will become firmly coagulated, and the central ones will remain in a semi-fluid condition. It will sometimes happen that the central portions will be removed, leaving the outer layers attached to the walls of the vessel. The circulation may then be continued through an adventitious cylinder of fibrine. Cases occasionally occur, in which a delicate velvety layer only is deposited on the lining membrane, which remains unaltered in appearance in other parts. The coagula which form in veins will, under such circumstances, lose, in different situations, much of their colouring matter; and it will be observed that the lining membrane of the vein is coloured (from imbibition) in exact proportion to the amount of colouring matter contained in the different parts of coagula. It will occasionally happen, that portions of the decolorized fibrin will become organized and intimately connected with the sides of the veins, as illustrated in a preparation exhibited to the Society. Such layers of fibrine appear constantly to have been mistaken for lymph, the product of inflammation. The extreme readiness with which the blood coagulates from the contact of purulent matter, affords a most important provision for the security of the general system. It appears to depend upon a faculty with which the blood is endowed for its self-preservation. This faculty, although hitherto unacknowledged by physiologists, doubtless exists, and is comparable to the preservative sensibility with which every other part of a living being is endowed. When purulent fluid is introduced into a vein, if the coagula are firmly formed, a local inflammation will alone ensue; but, if the morbid matter extends along the vessel, a high degree of constitutional irritation will follow, and the symptoms will occasionally bear a striking resemblance to those of typhus fever. In cases as they present themselves in practice, these two sets of symptoms are constantly present at the same time; but they may be produced separately by a very simple experiment: if, for instance, purulent fluid be introduced into a vein, and allowed to remain undisturbed, a local inflammation only will be set up, which will terminate in the formation of an abscess around the vein. The contents of the vein will then become softened, and expelled externally, together with the contents of the abscess. But, if the morbid matter be forced forward, in the course of the circulation, no local inflammation will occur, but the symptoms will indicate either the presence of secondary inflammation in some internal part, or of a general contamination of the blood. If the view taken of the origin of inflammation of the veins be correct, it will be evident, that any treatment, to be effectual, must have reference to the first periods of the disease; and that those remedies will most effectually guard the system against the contamination (so much dreaded in this class of cases) which will favour the sequestration of vitiated blood, and tend to localize the disease. The remedies which have been employed to subdue the local inflammation, appear but too often to have done so at the expense of the general system; for, although the local symptoms have become less prominent, fatal mischief has appeared in other parts. In severe cases, those remedies only can be safely employed which tend to preserve the power of the blood, and especially those which increase its coagulating power, so as to enable it to separate that portion which has become infected from the general circulation. Bark and opium, together with a nutritious diet, are the means which appear to favour these actions, upon the due performance of which the safety of the patient depends; while bleeding and calomel, however useful they may be in a case of simple inflammation of the coats of a vein, appear inadmissible when the disease, as generally happens, originates in its contents.—*Med. Times and Gazette, May, 15, 1852, p.* 503.

21.—DR. BILLING'S THEORY OF THE SOUNDS OF THE HEART.

[Mr. George Halford, House Surgeon to the Westminster Hospital, in a letter to the editor of 'The Lancet' on the above subject, remarks:]

In 'The Lancet' of 1832, Dr. Billing first stated that "the push or beat at the side is caused by the ventricular muscles in their systole to expel the blood. The first sound is caused by the tension produced in the shutting of the auriculo-ventricular valves; and the second sound is caused by the tension produced in the shutting of the ventriculo-arterial valves, &c. This is a simple unsophisticated explanation of the causes of the beat and sounds of the heart; and you will find that the morbid signs are all explicable as alterations of these."

Subsequently Mr. Bryan, of Stowmarket, adopted the same views. He says, "I shall content myself with offering an explanation of the first sound, founded on a simple law of physics, examples of which are so frequently before us as to have rendered it familiar to every one. Any flexible solid, suddenly brought from a state of relaxation to a state of tension, vibrates, and its vibrations are sonorous or not—i. e., audible or not—according to its physical structure. At the commencement of the systole of the ventricles, their auricular valves are flapped into play, and at the instant of their closure, the whole substance of the ventricles, and the valves, are suddenly brought to a state of tension, and then consequently vibrate. I leave it to the reader to determine, according to the laws of physics, whether the vibrations of the valves, floating freely in fluid, or the muscular substance of the ventricles, trammelled by the contact of surrounding solids, would most contribute to the formation of the first sound.

In 'The Lancet,' (see Retrospect, Vol. XXI, p. 104) Mr. Brakyn, of Dublin, reported a most ingenious experiment, in which air was substituted for blood, and the sounds of the heart correctly produced, allowance being made for the different medium. Before he left England I had an opportunity of witnessing the experiment in Mr. Lane's theatre, and afterwards I was present at several repetitions of the inquiry, when the subject was taken up by my fellow-students, Messrs. Waters and Sercombe.

Fully recognising the value of this beautiful experiment, I still felt that something more was wanting, and after much thought, I proceeded thus:—

Chloroform having been administered to a large dog, and insensibility produced, an opening was made into the trachea, and artificial respiration maintained. The anterior part of the thorax was then removed, and the pericardium slit up, so that the sounds of the heart were distinctly audible through the medium of a stethoscope. The superior and inferior venæ cavæ, and the pulmonary veins at their entrance into the left auricle, were now compressed between the fingers, and the heart continuing its action, a stethoscope was again applied, and neither first nor second sound was heard. After a short space, the veins were allowed to pour their contents into both sides of the heart, and both sounds were instantly reproduced. The veins were again compressed, and all sound extinguished, notwithstanding the heart contracted vigourously. Blood was again let in, and both sounds restored.

This experiment I have frequently repeated upon dogs and donkeys, and once in the presence of many persons, amongst whom I remember the following gentlemen:—Drs. Marshall Hall, Wilson, Daniel, Pettigrew, Fuller, and Ogle; Messrs. Tatham, Lane, H. C. Johnson, Blenkins, J. R. Lane, &c.

All that is claimed for the above experiment is its exemption from any rude interference with the mechanism of the heart's action. The cavities of the heart are untouched, there is no finger thrust into the auricle or ventricle, no hooking back of valves—in fact, not one source of sound substituted for another. Both sounds are destroyed and reproduced by the same means, the strongest argument for their depending upon the same cause, which is simply the backward current of the blood, first against the auriculo-ventricular, and second against the ventriculo-arterial valves.—*Lancet, June* 26, 1852, *p.* 618.

22.—ON GALLIC ACID IN HÆMOPTYSIS.

By Dr. William Bayes, Brighton.

[In the following case there seems to have been conflicting opinions as to its exact nature, some positively stating it to be bronchitis, others as positively asserting it to be phthisis. On the occasion, however, of Dr. Bayes being consulted, a slight exertion had been followed by an attack of hæmoptysis, to the extent of two or three tablespoonfuls. Dr. Bayes first prescribed a few grains of sulphate of magnesia with sulphuric acid in infusion of roses; and this treatment seemed attended with great benefit. Dr. Bayes remarks:]

I do not ever remember to have seen so rapid a change for the better in six days, but, on the 12th of June, I was as much grieved as astonished to see my patient walk into my consulting room, leaning upon the arm of his wife. Before, however, I had time to express my displeasure, the poor gentleman sunk into my chair, and the hæmoptysis returned, worse than at the first. Every fifth or sixth inspiration brought on the cough, and every cough was followed by sputa of frothy florid blood. I was seriously alarmed for him, and as soon as possible had him conveyed home, and laid upon the sofa, with the strictest injunctions that he should neither be allowed to speak or to move. I ordered him five grains of gallic acid every second hour, and was pleased to see that the hæmoptysis gradually diminished. He probably had lost half a pint of blood between twelve o'clock at noon (when he called upon me) and nine at night, the intervals between each expectoration being, at the latter hour about twenty minutes, and the colour still florid, although somewhat less bright. At a quarter past eleven o'clock the same night I was summoned hurriedly. In undressing the patient, the hemorrhage had a third time recurred. His breathing was now hurried, every inspiration brought on a cough, and every cough brought up bright arterial-looking blood. He was becoming faint and livid-looking when I arrived, and I really was afraid lest he should have been suffocated. The air passing through the blood already in his throat produced a gurgling sound, which alarmed his wife, to whom it sounded like the "death rattle." I now took a drachm of gallic acid, put it into a six-ounce bottle, dissolved it in hot water, and added rather more than a tablespoonful of brandy. I cooled this mixture in some ice which was in the room, and gave Mr. R. a dessert spoonful of it every three minutes. The pulse, which could not be felt at the wrist, recovered slightly after the third dose. At the end of half an hour the face became less livid, and he seemed much revived; I, however, continued the gallic acid every five minutes until the end of the first hour, and afterwards every ten minutes until nearly two hours had elapsed, when, to my great joy, the expectoration became perfectly inky. After the first inky expectoration the breathing became greatly relieved, and the patient fell into a quiet doze. He had taken the first drachm of gallic acid in one hour and fifty minutes. I then mixed a second drachm, in the same manner as the first, and gave him a tablespoonful of the mixture at half-past one o'clock, after which he fell asleep soundly; I then left him, with orders that the gallic acid should be given him, in five-grain doses, every hour, for six hours, while he was awake, or to be repeated every ten minutes, if the hæmoptysis were to recur. On calling next morning I found he had expectorated but twice, and the sputa were perfectly inky. I kept him under the influence of the gallic acid for three days, gradually diminishing the frequency of the dose. At the end of this time, as he had neither cough nor expectoration, I changed his medicine to the infusion of roses and sulphate of magnesia, and ordered him also to take five-drop doses of creasote, three times a day upon sugar; he now went on steadily getting well. I found it rather difficult to prevent his committing indiscretions in exercise and in diet; and therefore curbed him a little, by giving him minute doses of tartarized antimony; and upon the 26th, or fourteen days after his severe attack, he was so far recovered, and had for some days borne exercise in the open air so well, that I allowed him to go

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home again to London, indeed for the last three days I could scarce persuade him that he was an invalid.

Perhaps one of the most satisfactory results of the large doses of gallic acid, was the entire disappearance of the diabetes, and the simultaneous reappearance of bile and sufficient stools. Another point worthy of notice was, that the patient weighed precisely the same upon the day he left Brighton as he had done one month previously.

There is yet a third point to which I would direct the attention of the reader,—that the dyspnœa was almost completely relieved as soon as the system was well saturated with the gallic acid. The difficulty of breathing was no doubt caused by the gorged state of the vessels of the lungs, which was relieved by the powerful astringent acting upon them from within.—*Prov. Med. and Surg. Journal, Sept.* 29, 1852, *p.* 498.

DISEASES OF THE ORGANS OF RESPIRATION.

23.—ON THE TREATMENT OF PNEUMONIA.

By Dr. R. B. Todd, F.R.S., &c.

[The following cases illustrate a mode of treating pneumonia materially different from that which is most commonly employed. Dr. Todd commences by saying:]

I will just observe, *in limine*, that the plan of treatment which I have pursued in the cases now convalescent, as well as in many others, consists, not in the use of remedies directly antiphlogistic (so-called), that is, of remedies intended directly to knock down inflammation by withdrawing blood, the supposed fuel of all inflammation, and by reducing vital power; but in the employment of means which will promote the free exercise of certain excretory functions by which the blood may be purified, and certain matters may be removed from the system, which, remaining in it, tend to keep up a state very favourable to inflammatory affections. The remedies to which I refer tend to promote the free action of the skin and of the kidneys, and in a less degree that of the intestinal mucous membrane; whilst, at the same time, a free stimulation is maintained of that part of the skin which is near the seat of the pulmonary inflammation; and an essential part of this treatment is, that while these remedies are being used, we do not aim at reducing the general powers of the system, but rather at upholding them by such frequent supplies of nourishment, easy of assimilation, as may be readily appropriated; and when necessary, even by the administration of stimulants,—on this principle, that the free exercise of two such great excretions as come from the skin and kidneys, would, if fed only from the tissues and the blood, (without the introduction of fresh supplies), necessarily weaken and exhaust the general powers of the patient to an extent inconsistent with the full exercise of the process of repair needed by the inflamed organ.

Some physicians have drawn a distinction between cases of pneumonia, which is very useful with reference to treatment. There are, they say, two classes of cases of pneumonia: the one sthenic; the other asthenic and typhoid; the former capable of bearing the most active antiphlogistic treatment, and for which, indeed, they say, that that treatment is absolutely necessary, the latter requiring a supporting and even a stimulating plan, and for which an antiphlogistic plan would be extremely hazardous and dangerous. Now, while I fully recognise and admit the great practical value of such a distinction as this, I must remark, that it seems to me that it ought to be expressed differently. I would say, that all cases of pneumonia have, independently of this or that mode of treatment, a decided tendency to depress the general powers of life—some more, some less; and that, with all, a very decided direct antiphlogistic treatment is hazardous,—with some extremely so,—and that in none is it absolutely necessary; but, with others, there is no safety for the patient, unless the treatment from the beginning be of a decidedly supporting and stimulating nature.

You will note the distinction which I make between remedies *directly* and *indirectly* antiphlogistic. The former is a class of remedies whose supposed efficacy is founded upon a notion, (an erroneous one, as I think) namely, that certain acute and sthenic inflammations are attended with an undue exaltation of the vital forces, both local and general, and that these must be depressed before the inflammation will yield. I say, I think this view erroneous, for while I would readily concede, that in pneumonia there is an exaltation of vital force at the inflamed part, it seems to me quite plain, from the clinical history of the malady, that the local inflammation draws so largely upon the rest of the system as to depress the general powers of life; else, whence the weakness, the exhaustion, the failure of appetite, the wasting, which take place in the course of the disease, even when favourable, independently of any particular line of treatment?

The remedies indirectly antiphlogistic are those by which it is professed to promote and exalt some particular functions, as sweating, or some other secretion, and thereby to purify the blood, by eliminating noxious matters through those channels, and by such purification of the blood to reduce or remove febrile symptoms.

The first of the two cases to which I shall refer to-day, is that of Edward Mills, aged 28. He is a railway porter,—a good specimen of a strong, athletic man, of active habits, and accustomed to hard work, and, at the same time, evidently a person who has been well fed. In short, he is a person just adapted, by constitution and habit, to bear antiphlogistic treatment, if such were necessary.

On the 3rd Jan., 1851, he was seized with shivering, headache, shortness of breath, and cough, soon followed by the occurrence of a sharp pain in the left side, particularly upon taking a deep breath, and all this accompanied by loss of appetite and fever, The next day he began to expectorate a quantity of very viscid and rusty mucus, and the breathing became more rapid, and the cough more frequent and troublesome: and on the 5th he came into the hospital.

The character of the sputa at once attracted our notice; and those of you who came round with me will recollect, that I particularly directed your attention to its extreme viscidity, and showed you how it adhered to the vessel in which it was received; so much so, that I could turn the pot upside down without the least displacement of its contents. We likewise observed the peculiar rusty colour of the sputa. The matter expectorated in such cases looks exactly as if it had been mixed with iron rust. The peculiar colour is caused by the admixture of a certain amount of the coloured particles of the blood, which may be seen in it through the microscope. The mixture is evidently very intimate; there is, in fact, in these cases, a hemorrhage, doubtless from the naked vessels of the pulmonary air-cells. But the appearance and colour of the sputa differ very decidedly from those of the expectorated matter in ordinary cases of hæmoptysis. I think the difference is to be explained thus: In pneumonia, a copious secretion of mucus takes place from the membrane of the extreme bronchial tubes or bronchial passages; and blood escaping from several very minute vessels, becomes intimately intermixed with the mucus, and gives it its rusty colour. The escape of blood and the secretion of mucus take place simultaneously, and in about equal proportions, and are dependent on the same cause, namely, that which irritates the lung. But in hæmoptysis the escape of blood is independent of any secretion of mucus, and often takes place without it, and the quantity of blood is always greatly in excess of that of mucus.

When present, this viscid and rusty state of the sputa is a pathognomonic sign of pneumonia. Indeed, the great viscidity alone, even without any red colour, but with a yellowish bilious hue, ought always to excite our apprehension, lest pneumonia may be commencing. Passive congestion of lung, such as we may meet with in low fevers, or in heart disease, will, however, sometimes give rise to sputa not unlike those of pneumonia, but to be distinguished from them by their being less viscid, and containing more blood, which is much less intimately mixed with the mucus.

Although the rusty and viscid character of the sputa will often enable us with certainty to diagnose the presence of inflammation of the substance of the lung, we must not conclude, that the absence of this characteristic expectoration is a positive proof against the existence of pneumonia. Many cases of pneumonia pass through all their stages, and resolution takes place, without the occurrence of any expectoration, or with that of a very trifling amount of colourless mucus. In the cases of typhoid pneumonia, it is not uncommon to find, that the patient does not expectorate, probably owing to his weak and sluggish state, his sensibilities being much blunted.

We found that our patient exhibited certain well-marked constitutional symptoms. He had a flushed face, and a hot and dry skin, and a tongue coated with a thick, white fur. He also complained much of thirst, and of a troublesome cough, and he suffered from a shooting pain in the left side below and a little in front of the scapula, and extending over the shoulder, which impeded his breathing, and was increased by deep inspiration. At the same time there was no very great increase in the quickness of pulse (it was 96), but the respirations were much more frequent than in health, being 36. The pulse was full and strong, and such as would have, not only justified, but invited bleeding, if we allowed ourselves to be influenced by that single symptom in adopting such a line of treatment.

A careful examination of the chest at once enabled us to determine the exact nature of the evil under which this patient was suffering. By percussion and auscultation we found a normal state of the right lung, the breathing being, however, rather more intense (puerile) than in health. On the left side, the percussion sound was quite natural in front, and good vesicular breathing was audible. Such, likewise, was the case all over the scapular region behind; but at the base of the left lung, all about the region to which he referred his pain, a decidedly dull sound was elicited by percussion. Now, this dulness of percussion may arise as you know, either from an effusion of fluid between the pleural membranes, or from a thickened state of pleura, or from a condensation or such other alteration of the lung as prevents its free distension by air. When fluid is interposed between the pleuræ, the vibrations excited in the lung by the voice are not propagated to the wall of the chest, unless in cases where some old bands of adhesion serve to connect the surface of the lung to the costal pleura. In the present instance, the vibrations were sensible to the hand over the dull surface, and, therefore, we had to seek for some other cause for the dulness, besides pleuritic effusion.

There was no history of any former attack of pleurisy; therefore it was improbable that there could have been any thickened state of pleura. We found, however, a decided modification of the voice and breathing, which sufficiently accounted for the dull percussion. There were both bronchophony and bronchial breathing. Both these conditions occur only in a solidified state of lung; and when accompanied by viscid, rusty sputa, and the train of symptoms which we found in our patient Mills, we have no hesitation in referring the solidification to the effusion of plastic matter into the air-cells of the lung, which likewise serves to exclude the air from them.

The seat of the effusion of plastic matter in pneumonia is in the fine air-passages within the lobules of the lung, the inter-lobular passages being free. The air, therefore, in inspiration, rushes through these tubes; and the vibrations which it excites on the walls of the tubes are readily propagated by the solid lung to the surface, and thus the phenomenon of tubular or bronchial breathing is heard—a sound similar to that which one may cause by simply blowing into a tube, or of which you may get a natural example by applying the stethoscope over the larynx and trachea in the neck.

And in bronchophony, it is as if the vocal sounds were generated in the air-passages—the voice seems to come from the lung. The fact is, that the vibrations excited at the vocal cords in the larynx are propagated along the walls of the bronchial tubes; and instead of being diffused through the soft spongy lung, as in health, they are conducted in full force to the thoracic wall by its solidified portion.

You must not loose sight of the fact, that bronchial breathing and bronchophony are present whenever a part of the lung is solid, whatever be the cause of the solidification, provided only a great portion of the bronchial tube is pervious. Thus it is that we often find these signs when tubercular deposit has solidified a greater or less portion of lung. Sometimes pneumonia, running an insidious and chronic course, will make the lung solid, and develope these signs; or cancerous deposit may have been slowly taking place. To determine, then, the exact signification of these signs, you will have again to call in the aid of the history of the symptoms of the case.

You may have bronchial breathing when a slight pleuritic effusion has taken place; but such bronchial breathing will be accompanied, not with bronchophony, but with œgophony—a state of voice resonant and bronchial in its character, but rendered bleating by the interposition of a thin layer of fluid between the costal and pulmonary pleura. The existence of this modification of voice, and the simultaneous absence or great diminution of the usual vocal vibration, when the hand is applied closely to the wall of the chest, will distinguish the bronchial breathing which is accompanied by pleuritic effusion, from that which is due to the simple condensation of pneumonia.

Thus, then, the percussion which we first practised on making our physical examination of the chest directed us to the seat of the lesion; and from the bronchial breathing, the bronchophony, the rusty expectoration, the local pain, and embarrassed breathing, and the febrile disturbance, we diagnosed with confidence and certainty that the lower lobe of the right lung was in a state of inflammation, and had passed rapidly into hepatization. It is probable, too, that the inflammation of lung was accompanied by some degree of pleurisy. Of this, however, we had no certainty; but three circumstances rendered it probable; 1st, because the local pain was sharper than it usually is in pneumonia; 2ndly, because on one day the bronchophony was decidedly œgophonic in character; and, 3rdly, because pneumonia but rarely occurs without some degree of pleurisy affecting the pulmonary layer of the pleura.

The portion of lung involved in the inflammation was rather more than one-third of the posterior part—the inferior third; and the inflammation extended half way, or possibly two-thirds forwards, towards the anterior surface of the lung. This was also the case in the second example of this disease which I shall bring before you to day.

It is a remarkable feature in the clinical history of pneumonia, how prone it is to attack the lower part of the lung, and how much more frequently the posterior part is affected than the anterior, and how often the inflammation involves only a portion of one lung, and that portion not exceeding one-third or one-half, not often reaching to the anterior surface, and seldom extending to the entire lung. I know of no satisfactory explanation of its partiality for the posterior and inferior part. Perhaps dependence of position, as likely to affect the circulation, may have something to do with it. The extent of the inflammation, and, perhaps, in some degree, its position, ought always to be taken into account in forming a prognosis. If only a portion of one lobe is affected, recovery is much more frequent than the reverse, if the treatment has not been of a too depleting nature; should the whole of one lobe be involved, or more than half the lung, the chances of recovery are much diminished; and, should the inflammation engage the whole of one lung, the disease is very frequently fatal. When the pneumonia is seated in the upper lobes, the chances of recovery are much less than when it occupies the lower lobe. This is partly because when the disease attacks the upper lobe it is of a more asthenic nature, and partly also because this part is most apt to be affected in old persons. The clinical fact is highly deserving of your attention, and ought to exercise an influence upon your treatment.

Treatment.—Now, the treatment to which this patient, and the other whose case I shall presently detail, were subjected, consisted in the free application, to the back and side over the region of the dulness, of flannels soaked in warm spirits of turpentine, which were kept on for half an hour. These stupes were applied at three several periods of the day for the first three or four days. They excited considerable irritation and redness of the skin. At the same time a diaphoretic medicine was administered, consisting chiefly of the liquor ammoniæ citratis, of which as much as six drachms were given every three or four hours; at the same time an occasional dose of a mild aperient medicine was given, and the patient was allowed a pint of beef tea daily, with a little milk and bread.

Let us see, then, the progress of the case under this treatment.

The patient, you will remember, came in on the 5th of January, which, reckoning from the date of the first appearance of rigor and pain, was the third day of the disease.

On January 6, he was much the same as on his admission. Pulse 96; respirations, 36.

On the 7th, a small patch of herpes was noticed at the right angle of the mouth. Pulse 90; respirations, 36. A decided crepitation is heard at the end of each inspiration, although the breathing remains tubular; sputa abundant and less viscid.

On the 8th,—pulse, 80; respirations, 40;—the dulness on percussion less extensive; the returning crepitation is now audible over the whole of the region of inflamed lung; fever less; tongue cleaning; the pain in the side being troublesome, ten leeches were applied.

Jan. 9th, (seventh day of the disease).—The pain much relieved; bronchial breathing completely replaced by crepitation. Pulse, 96; respirations, 30.

On the 10th, the skin moist and soft; sputa no longer rusty; crepitation audible on deep inspiration, and the voice slightly resonant beneath the scapula. Pulse, 60; respirations, 32.

On the 12th, crepitation being still present, a blister was applied to the side; and, on the 13th, it was reported that the breathing was nearly pure, crepitation having almost disappeared. Pulse, 68; respirations, 28.

On the 17th, fourteen days after the first seizure, our patient was quite convalescent.

Case 2.—The second case is that of a lad named Minns, aged 17, a waiter at a coffee house. In his vocation he is a good deal exposed to cold, but his health has always been very good. His illness commenced on February 8th, with shivering, loss of appetite, cough, pain in the right side, and vomiting. In this case, the signs were of the same character as in the former, but were situated in the lower part of the right side. There was similar acceleration of pulse and breathing. The percussion was dull over the lower part of the right lung behind, where also there was a total absence of vocal vibration. In other parts of the chest the breathing was pure, and the percussion resonant.

Let me remark here, that, in watching cases of acute chest disease, it is very important to note the frequency of the pulse and respirations, as furnishing one of the most useful guides in the progress of the case; when matters do not go right, you find the frequency of pulse and breathing increase from day to day, or remain stationary; but if, on the other hand, you find a gradual fall in the frequency of the pulse and breathing, you may feel sure that your patient is making satisfactory progress.

These physiological signs are not inferior in importance to any afforded by the patient in the course of his malady; and you may even trust to them alone, when they take the favourable course, to assure you, in the first instance, that the disease is not extending itself, and afterwards, that the inflammation is being resolved.

The diagnosis of this second case differed from that of the first in this,—that, inasmuch as, in addition to the dulness on percussion, the usual vibrations excited by the voice were not felt when the hand was applied to the chest, there must have been fluid interposed between the lung and the pleura, to prevent their propagation to the walls of the chest; whence we concluded, that a slight pleuritic effusion accompanied the hepatization of the lung.

The progress of this case, under the same treatment as that applied to the first, was equally satisfactory.

Thus, he came in on the 10th of February, on the third day of the disease; his pulse was then 118; his respirations, 38.

On the 11th, the pulse was 128; respirations, 34.

On the 12th, (the fifth day of the disease), we find the pulse still high, 120; and respirations, 40. There was, however, a manifest improvement in the physical signs. The vocal vibration was now to be felt, showing that the pleuritic effusion had been absorbed. Slight crepitation began to be audible near the base.

On the 13th, the pulse had fallen to 96, but the respirations were still as high as 42.

On the 14th, the seventh day of the disease, the pulse had fallen still lower, and, what was more important, the frequency of the breathing was reduced to 32; crepitation was now distinctly audible over the whole of the diseased portion of lung.

On the 25th, the crepitation had become much larger and moister, and a good deal of vesicular breathing was audible at the lower part of the lung; and on the 17th, (the tenth day of the disease), all traces of crepitation had disappeared, and the dulness on percussion had diminished; the pulse was 78, and respirations, 29.

Four days afterwards the patient left the hospital, quite restored to health.

Here, then, are two cases which I think you may take as examples of pneumonia, or, more correctly, of pleuro-pneumonia, of an average amount of severity. They were by no means of what is commonly called the asthenic or typhoid kind. The first, indeed, was distinctly sthenic; and the patient was a strong, athletic, muscular man, just such a one as you might bleed without much hesitation. The other patient was not of so a vigorous a frame; but still, neither his constitution nor his symptoms were such as would have justified our regarding the case as asthenic.

Yet you will observe, that, in the first case, the inflammation was fairly undergoing resolution on the seventh day of the disease, and, on the eleventh day, the lung was in its natural condition; on the fourteenth day the patient was convalescent. In the second case, resolution was fairly established likewise on the seventh day of the disease, and on the fourth day of the treatment; and pure breathing was audible on the tenth day. A fortnight, likewise, was sufficient to restore this patient to complete convalescence. It is remarkable, that, in both cases, the resolution should have taken place on the same day of the disease; but then it must be noted, that, in both, the treatment began on the same day, namely, the third from the seizure.

Now, I have brought these cases before you as good illustrations of the progress of the disease under a mode of treatment which I have found most successful in a considerable number of cases, both in hospital and private practice. This mode of treatment differs very considerably from that laid down by some of our best authorities as that which ought to be pursued in pneumonia. I have described in what that treatment consists. But I am quite prepared to hear it objected, that such a treatment is really doing nothing but leaving the disease to take its own course. Well, and if that course be to recovery in a short time, and at no expense to the powers of the patient, can we adopt any plan better suited to him? But I do not admit that the frequent application to the chest of such counter-irritants as mustard or turpentine, (three or four times a day), and large doses of the acetate or citrate of ammonia, and occasional purging, exercise no influence, either upon the whole system or upon the local disorder. The drugs cause, undoubtedly,—and especially when the patient is kept in bed—free sweating or free diuresis, and often both; and it is quite consistent with all experience, that frequent counter-irritation exercises a beneficial influence on internal inflammations, and relieves pain. I prefer the frequent application of such stimulants as mustard and turpentine to that of blisters, as being quicker, and, on the whole, more efficacious and less weakening.

Now, in the particular cases under consideration, a manifest check to the advance of the disease took place immediately (the treatment was begun, and the signs of resolution followed very speedily, and I have already alluded to the curious fact, that the resolution in both cases was established on the same day of the disease, the treatment having likewise commenced on the same day,—a fact which seems very much to indicate that the treatment had a good deal to do with the early resolution of the inflammation.

Now, in estimating the value of this or that mode of treatment in any given disease, we should ascertain what are its natural tendencies—to recovery or to death. Is it a very fatal disease? When recovery takes place, what is the process? When death occurs, what are the immediate antecedents, and what its immediate causes?

These are points of clinical history, upon which our returns are, as yet, far from being complete or exact. The numerical returns which we have respecting this disease are unsatisfactory, because, in those returns, all cases of pneumonia, whether asthenic or otherwise, and whatever be the quantity of lung involved in the inflammation, are classed together. Suppose you were making inquiry respecting the results of treatment in cases of burns, how little information could you derive from numerical returns, if the cases were not classified according to the extent of surface involved in the burn? It is just so with pneumonia; we have as yet no classified returns; but, looking to general experience and such numerical returns as we have, it may be stated, that, as in burns, pneumonia is fatal in proportion to the extent of pulmonary surface involved; but that, in the cases where one-fourth or a less portion of lung is inflamed, it has on the whole a very decided tendency to recovery. On the other hand, when all one lung is involved, or when a considerable extent of both lungs is engaged, the tendency is as decidedly to a fatal result.

The fatality of pneumonia, too, is very much influenced by the period at which the disease may have been detected, and some kind of medical treatment adopted. Thus, Grisolle's tables show that, when cases were brought under treatment within the first three days, only 1-13th died; but if not brought in before the fourth day, 1-8th died; if on the seventh, 1-3rd; on the eighth, so large a proportion as ½ died. Age, likewise, exercises an important influence, and there can be no doubt that (excluding infancy, respecting which our facts are of the most satisfactory nature), the mortality increases with the age; and at the advanced periods of life pneumonia must be regarded as a very fatal disease.

There are those who think, that when pneumonia affects the apex of the lung, it has a more fatal tendency than when it affects the base. I myself lean very much to this opinion, and because (without referring to complication with tubercles), in such cases, the disease is generally of the low or typhoid character; nay, under such circumstances, the pneumonia may be erratic, and, like erysipelas, pass from one to another part of the same lung.

It may, indeed, I think, be laid down, that in all these cases, the pneumonia has a fatal tendency in proportion as it tends to exhaust, whether by its extent or by the vital powers of the patient too readily succumbing, or by the exposure to cold, or by mental or bodily exertion during the early stages of the disease, or by some powerfully depressing influence connected with the original exciting cause of the disease.

But if you take cases of pneumonia occurring in persons in the full vigour of life, and not involving a very large portion of the lung, and coming under treatment early, we may regard it as a disease of not very fatal tendency, but rather very prone to get well when the vital powers of the patient have not been too much depressed; and such cases will get well whatever be the treatment early adopted, provided no great error has been committed in either direction—either in that of stimulating too freely, or of reducing too much. What we have to do in such cases is, to adopt the treatment which favours the shortest convalescence, and in the more severe cases we have to discover a mode of treatment which will promote the reparative process and uphold the powers of life.

The plan of treatment which has been recommended by some of our highest authorities, I need not tell you, is that by bleeding and tartar emetic. You bleed early from the arm, and if necessary you bleed a second or a third time; and if under this treatment resolution does not speedily take place, you bleed locally by leeches or by cupping, and likewise give tartar emetic more or less freely; to all which counter-irritation may be superadded in the more advanced stages.

I have had ample experience of this treatment; and I must confess, that that experience has so little satisfied me with it that I have for some years ceased to adopt it; for, under this treatment I have seen too many die; and when recovery has taken place, in too many instances has it been with a tedious, lengthened convalescence. Indeed, of all the fatal cases which it has fallen to my lot to witness, the great majority have been treated in this way; and in most of them antiphlogistic treatment had not been carried to an excessive or unreasonable extent.

In bleeding, the difficulty is to determine how much blood you may safely take away. Upon this point, I think all who view the matter candidly must acknowledge, that we have no satisfactory rule, notwithstanding the immense experience we have had of the practice. A loss of blood which scarcely makes an impression on one man will seriously reduce another; or a patient, who in a former illness has borne bleeding well, will suffer from it very much on a subsequent occasion; or losses of blood which were borne with impunity in one epidemic are injurious in another. All these are difficulties against which the greatest tact and judgment find it difficult to contend. And, although in particular cases relief may be afforded to certain symptoms by a timely bleeding, there is no doubt that in many it exercises no real influence in checking the progress of the disease; for, notwithstanding early bleeding, the lung becomes fully hepatized.

And as far as regards tartar emetic, I have long noticed, that patients do best when the drug neither sickens nor purges. On this subject, I am glad to fortify my own opinion, formed independently, by those of two such excellent authorities as the late Dr. Thomas Davies and Dr. Watson. Dr. Watson, alluding to Dr. Davies, says: "He states, and this is accordant with my own experience of the remedy, that the tartar emetic always acts best when it produces no effect except upon the inflammation; *i. e.*, when it does not cause vomiting, or purging, or a general depression of the powers of the system." When, indeed, you can insure your patient against these effects of the drug, it is a very safe and useful remedy in pneumonia; but the difficulty is to limit its action in this way. This may be done entirely as regards its depressing effects, by combining opium with it, and the combination often exercises a very good effect.

I had asked myself, why does this combination of tartar emetic and opium often tell so favourably in pneumonia, and the conclusion which I came to was this,—because it tends very decidedly to promote sweating, and perhaps other excretions; and I was thus led to try drugs of a like tendency, such as the liquor ammoniæ citratis or acetatis, in large and frequently repeated doses, which do not exercise any depressing influence upon the patient. In pursuing the treatment, you must be careful to give full doses—six or eight drachms, and to repeat them every three or four hours; and you must diligently apply, two or three times a day, or more frequently, counter-stimulants over a large extent of the surface of the chest, such as mustard, or large flannels soaked in warm spirits of turpentine. With this you may often safely and with advantage combine the use of opium, with or without calomel; and now and then a mild aperient will be necessary.

Under this treatment, deaths from pneumonia have become extremely rare among my cases. The fatal cases are those of patients who come in far advanced in the disease, or in whom the disease has rapidly invaded a large surface of one or both lungs; but even such cases often do well under this treatment, combined with support and stimulants.

In all the cases, I am careful to give support from the first, in the shape of animal broths in small quantities, and at short intervals, and sometimes a small amount of stimulus.

In the decidedly typhoid cases, I need scarcely say, that the free use of stimulants is of essential service; and it is often of immense advantage to give quinine freely, the special indication for this latter drug being profuseness of sweating.

Pneumonia often comes on in connexion with rheumatic fever, or in a highly rheumatic or gouty diathesis. Such cases bear ill the bleeding and tartar emetic system, but are particularly well suited for this plan which I now recommend to you, and in them opium may be freely used with very great advantage.

I had almost forgotten to allude to a very interesting point which we observed in both these cases, viz., that during the stage of hepatization the chlorides had disappeared almost completely from the urine, but returned to it on the re-appearance of large crepitation, and on the resolution of the inflammation. This curious piece of chemical history was first pointed out by Redtenbacher, who records the results of his observations of it in eighty cases in a paper in 'Hibra's Zeitschrift der K. K. Gesellshaft der Aerste.'

I forbear from any further remarks on this subject, because my friend Dr. Beale is engaged in repeating the experiments, and with other observations on the chemistry of the sputa and of the blood in pneumonia, which, I have no doubt, will, ere long, furnish us with some very interesting results.*—*Med. Times and Gazette, May* 15, 1852, *p.* 483.

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* That I am not singular in feeling much dissatisfied with the bleeding and tartar emetic treatment in pneumonia, I infer from the fact, that this mode of treatment has been, as I am informed, quite given up at the great Clinical Hospital at Vienna. The curious paper of Varrentrapp, of Frankfort, in 'Henle's Zeitschrift,' which I did not see till long after this lecture was delivered, indicates that that able physician had no particular liking for the treatment in question. Varrentrapp adopted the treatment of pneumona by the frequent inhalation of chloroform in small quantity, but not to such an extent as to cause insensibility. The most frequent immediate effect of the treatment was perspiration and reduction in the frequency of the pulse. The results of the treatment appear to have been highly favourable. An able analysis of Varrentrapp's paper was published in the 'Medical Times, Vol. XXIV., 1851.'

24.—ON TOPICAL MEDICATION IN THE TREATMENT OF DISEASES OF THE MUCOUS MEMBRANE OF THE AIR-PASSAGES.

By Dr. Horace Green, New York.

[Dr. Green, after alluding to the discussions excited by the introduction to the profession of the above mode of treatment, and the objections which were then made as to its facility or safety, says:]

When, in 1840, I brought before the Medical Society of New York the subject of the treatment of diseases of the larynx, by means of the direct application of therapeutical agents to the lining membrane of this cavity, and asserted the safety and utility of their employment, the proposition was received by a very large proportion of the profession with entire incredulity, many of them declaring that "to apply topical remedies below the epiglottis was an anatomical impossibility." It was soon found, however, that topical medication was a method of treatment most appropriate to certain forms of laryngeal disease; and thinking, practical men were not slow to adopt a plan that was found feasible and successful in the management of these affections. Consequently, such a mass of testimony was soon accumulated on this point, that the most incredulous were obliged to admit the practicability and the benefit of the operation. But when, in the publication of my work on "Diseases of the Air-passages," in 1846, the statement was made that when tracheal disease existed, the sponge-armed probang could be passed, ordinarily, without difficulty, through the rima glottidis, down to the bifurcation of the trachea, and that the operation in my hands had been repeatedly performed, the "old fogies" of the profession were again shocked and alarmed; the possibility of this operation was positively denied, and, in unmeasured terms, "Young Physic" was abused for having suggested such "unwarrantable and dangerous innovations in the practice of medicine." Still, those physicians who had succeeded in passing the instrument into the glottis ventured, in cases of aphonia, or in ulcerations of the tracheal mucous membrane, to push the sponge through the glottic chink into the trachea, and down to the bifurcation; and it was found that this operation was not only facile and safe, but one of the greatest advantage in some of the above conditions of disease. The question, therefore, of the practicability of this operation was no longer a mooted point, and I can assure the gentlemen of the Medical Society of London that I have succeeded in passing an armed probang down to the bifurcation of the trachea, probably over five hundred times; and this has been done in the presence of half that number of of medical men, all of whom, if required, will give their testimony to the fact. In no case have I seen any injury arise from the operation.

In most cases, however, of disease of the laryngo-tracheal membrane, it is only necessary to pass the sponge into the larynx; for the contraction of the glottis, which takes place on the introduction of the instrument, presses the fluid from the sponge, which trickles down, and is diffused over the tracheal membrane. But whenever ulcerations of the tracheal membrane exist, I have found it exceedingly advantageous to pass the sponge, saturated with a strong solution of the nitrate of silver, along the whole length of this tube. In cases where I have had reason to believe that ulcerations of the membrane had extended below the bifurcation, I have employed a probang nearly straight, armed with a sponge, and have pushed this instrument, not only down to the division of the trachea, but, turning it aside, *have passed it at will, in many instances, into the right or left bronchus, with as much ease and safety as the catheter is introduced into the bladder.*

[That there may be no doubt as to the feasibility of the operation, Dr. Green relates the following cases which were performed before several medical men.]

In January, 1849, Mr. A., a young clergyman from Canada, who was suffering from laryngeal phthisis, came under my care. He had been affected for several years, and was much emaciated. A very troublesome cough, which was attended by a constant expectoration of pus, was present. Complete aphonia had existed for more than a year. On examining his throat, the epiglottis was found much thickened, and its border serrated with ulcerations. Topical medication, with appropriate general treatment, was employed. Applications of the nitrate of silver were made, first to the epiglottis, then into the larynx, and subsequently, through the rima glottidis, into the trachea. Under this treatment the patient improved rapidly; the cough and expectoration diminished; and after a few weeks of treatment there seemed to be present but little indication of disease in the larynx or trachea. Still some degree of cough remained, and the aphonia was as complete as in the commencement of the treatment.

All along the patient had complained of a sore spot directly under and below the right clavicle, and this remained after the improvement I have mentioned had taken place. Believing that ulceration existed in the bronchial division at this point, I determined to reach it with the caustic applications. Selecting a long and nearly straight probang, and directing the head of the patient to be thrown well back, I passed the instrument into the trachea, and carrying it down to the bifurcation, turned it a little to one side, and pushed it nearly two inches into the right bronchus. On withdrawing the sponge, it was found covered with pus; and Mr. A. remarked that "the right spot had been touched for the first time." This operation was repeated daily for several days; and as soon as the ulceration at this point had healed, which took place after eight or ten applications to the part, the voice of the patient, which for a twelvemonth had been lost, was restored.

I have this day, (June 8th,) in the presence of two physicians, the one a practitioner in this city, and the other from Ohio, passed the sponge-probang, wet with a solution of nitrate of silver, of the strength of forty-five grains to the ounce of water, through the trachea, and quite two inches below its bifurcation. In this case the patient is himself an intelligent physician, and no doubt whatever existed in his mind, or in the minds of those present, as to the nature and extent of the operation.

In the 'New Hampshire Journal of Medicine' for April, 1852, is the history of a case, reported by Dr. E. R. Peaslee, professor of anatomy, &c., in Dartmouth College, which well illustrates the *capacity* of the human larynx to receive foreign bodies of considerable size into its cavity. The details of this case, which is one of great interest, are given at length by Professor Peaslee; but I will only allude, with much brevity, to the principal points in the case. The patient, who was a well-made, robust man, aged about forty-four, having lost the cartilaginous and also a part of the bony septum of the nostrils, from a scrofulous affection, was in the habit of introducing a piece of moistened sponge into the nasal passages several times a day, to remove the fœtid secretion produced by the still progressing disease just mentioned.

On the 23rd of July, 1850, while applying the sponge as usual, he accidentally let it slip from his fingers, and it passed back at once through the posterior nares. A paroxysm of coughing, with considerable dyspnœa, at once ensued; and Dr. Peaslee, being hastily sent for, saw the patient a few minutes after the accident occurred. He at once passed his finger into the pharynx, expecting to dislodge the sponge; but failing in this, and being assured by the patient that he felt the sponge lower down in the œsophagus, he explored that part, with the long curved pharyngeal forceps, and thus ascertained that it was not in the pharynx at all. On questioning the patient as to the precise size of the sponge, he declared to Dr. Peaslee that it was "as large as half a hen's egg." As he was a man of accurate judgment, and was positive as to its size, and moreover, as his breathing became easier, and his cough ceased almost entirely, Dr. Peaslee assured the patient that if his estimate of size was correct, it was "almost an anatomical impossibility," that the sponge could be in the trachea, for if there, the air could not pass so freely to and fro in that tube, as it did at that moment. Still, supposing that the sponge was lodged in the œsophagus, or had passed into the stomach, an emetic of ipecacuanha was administered, which removed the contents of the stomach, without dislodging the sponge. But the difficulty of breathing at once returned, and the patient declared he could again feel the sponge at the bottom of the pharynx. An œsophageal bougie was now obtained, and passed slowly into the stomach, without encountering the least obstruction, excepting a very slight impediment which was met with for a moment just before the instrument slipped into the stomach. But the patient again breathed quietly, and said, "now I can feel it in my stomach."

Dr. Peaslee being obliged to leave his patient to fulfil a consultative engagement with a physician residing in a neighbouring town, left directions that his colleague, Dr. Crosby, should be immediately called, if the dyspnœa and cough returned. During the afternoon and the following night, the paroxysms of dyspnœa and cough returned several times; the respiration became more difficult, and Dr. Crosby was called in, who, after passing the bougie into the stomach, without finding the sponge, concluded, with Dr. Peaslee, that it must be in the trachea; its precise location, however, could not be ascertained by placing the ear over the trachea or chest, but as the respiratory murmur was found to be diminished throughout the whole of the right lung, and as this side was also less distended on inspiration than the other, it was concluded that the sponge was at length engaged more especially in the right bronchus. The necessity of practising an operation was now quite apparent, and it was determined to perform it about ten o'clock on the morning after the occurrence of the accident.

The incision was made into the trachea by Dr. Crosby, in the manner ordinarily practised in this operation. The hemorrhage was very profuse, and being drawn freely into the trachea, at each inspiration, "filled the tube from the sponge up to the incision, and thus completely asphyxiated the patient." It was quickly removed, however, by Dr. Peaslee, and an attempt made, with a long forceps, to remove the sponge, but the mass was so firmly impacted that great difficulty was found in accomplishing it. The first and second attempt brought away, at each time, only small portions of the size of a pea, but the third removed the whole mass, as it was supposed at the time. After its removal, the usual means for exciting the respiratory movements were employed, when the patient at length breathed, and in a few minutes was able to answer questions. But the hemorrhage again returned some hours after the operation, filling up the trachea, and obstructing respiration; and although it was several times removed from this tube, yet the patient became comatose and died fifty-three hours after the operation.

The respiratory organs only were examined. The *larynx* was well-proportioned, but in no respect abnormal. The *trachea* was inflamed throughout. "A patch of inflammatory exudation just above the bifurcation, equal to about a square inch in extent; imbedded in which, and upon the left side, was a piece of sponge about the size of a common white bean, and so adherent as to detach the membrane when removed."

In concluding, Professor Peaslee thus remarks:—"This case finally settles the question—if anybody still has any doubt—of the possibility of passing a sponge through the rima into the trachea, in the treatment of tracheal disease. The sponges used by Dr. Horace Green for that purpose, are about half an inch (generally less) in diameter. The one I actually removed was more than fourteen times as large as one of these; and the whole mass at first was at least *fifteen or sixteen times as large*.

On measuring the mass of sponge removed by the operation, it was found to be even larger than the patient had said. "Another piece cut out as a fac-simile of it, but found on accurate comparision to be somewhat thinner and *smaller*, is, when moistened, one inch and three-quarters long, one inch and a quarter wide, and fifteen-sixteenths of an inch thick; all this in addition to three small pieces detached from the original, as before said."

It is quite time that the medical profession generally should be made better acquainted with the very great advantages which may be derived from an appropriate combination of topical with general remedies, in the treatment of many forms of disease of the respiratory passages.

Not only in chronic, laryngeal, and bronchial disease, but in membranous croup, in asthma, in œdema of the glottis, and in the earlier stages of *tubercular phthisis*, topical medication has proved in my hands, not only palliative but *curative*, in many instances, in all these varieties of disease.

I am fully aware of the clamour many in the profession are ever ready to raise at the bare suggestion that any plan of treatment will prove remedial in the last-named disease; but, after a long and quite an extensive experience in the treatment of diseases of the air-passages, I am fully confirmed in the opinion, that in many instances of tubercular affection, complicated with, or preceded by, follicular disease of the pharyngo-laryngeal membrane—and such cases are much more numerous than the profession are generally aware of—we have it in our power to arrest the disease by the persevering employment of topical measures conjoined with appropriate general treatment.—*Lancet, Sept.* 18, 1852, *p.* 259.

25.—ON THE TOPICAL TREATMENT OF ACUTE INFLAMMATION OF THE LARYNX AND TRACHEA.

By Dr. Eben Watson, Professor of the Institute of Medicine in Anderson's University, &c., Glasgow.

[Dr. Watson first endeavours to explain the modus operandi of a solution of nitrate of silver on an inflamed mucous membrane. He says:]

There is a little experiment, simple, and easily repeated, which is familiar to all who have paid attention to the recent advances made in our knowledge of the inflammatory process, and which presents us with an excellent occasion for observing the action of the solution of nitrate of silver, in the different stages and degrees of that morbid state. I refer to the excitement of inflammation in the web of a frog's foot stretched out under the microscope. When, for example, a red-hot needle is passed through the web, the following are the phenomena observed:—A spot in the centre of the inflamed part is sphacelated, destroyed by the passage of the needle through it; a circle round the spot is usually found in a state of complete congestion, the vessels being dilated, and the corpuscles almost perfectly stationary within them, and in the part beyond this circle the vessels are not so much dilated, and the stasis of their contents is not so complete. The stream is seen passing slowly away into the collateral circulation of the unaffected parts of the web.

Now these two circles represent two degrees of inflammation, which it is important to distinguish wherever they occur, and, perhaps, especially when the seat of morbid action is the mucous membrane of the larynx or trachea. That part of the web of the frog's foot in which the stasis was complete represents the most intense, or sthenic degree; the other, in which the stasis was not so complete, represents what is usually called the sub-acute, and perhaps chronic, varieties. And the effects of the solution of caustic on each of these parts is markedly and importantly different. In the part which is most intensely inflamed, the solution, in the direct ratio of its strength, increases the stasis of the blood within the vessels. The latter seem to be unable to dilate further, and are, therefore, little changed, but the nitrate of silver acts through the coats upon the blood which they contain by causing its partial coagulation, and, likewise, by withdrawing water from the serum for the crystals of the nitrate which begin partially to form if the solution is strong. In that part of the web, on the other hand, which had been less intensely inflamed, the stimulant solution causes renewed and increased dilatation of the blood-vessels, and the retarded current moves on in them more freely than before; a cure being thus speedily effected if the exciting cause of the inflammation has ceased to act.

That precisely similar degrees of inflammation occur in the mucous membrane of the larynx and trachea with those just described as artificially produced in the frog's foot, I need hardly attempt to prove, for it will be at once admitted that there are three kinds of acute laryngitis: one in which no false membrane is formed; a second, in which a false membrane is formed, but in which the pharynx, as well as the larynx, is affected, viz., the diphtherite of French writers; and, lastly, that intense local inflammation of the larynx and trachea, accompanied by exudation, to which in this country we generally restrict the term "croup."

1. The first kind varies in its intensity from the most trivial catarrhal irritation to a severe inflammation of the whole thickness of the mucous membrane lining the windpipe. It very often commences about the fauces and passes downwards, causing cough more or less croupy in its character, difficulty of breathing, and hoarseness of voice. It is accompanied by fever of greater or less intensity, and its chief physical signs are, increased loudness of the respiratory sounds in the larynx and trachea, with occasionally a whistling sound, from the absence of the natural mucus of the part, and from partial spasm of the glottis. This kind of laryngitis is more frequently complicated with bronchial inflammation than with pneumonia, and as the patient sinks from non-aëration of the blood, the most prominent symptoms of the laryngeal affection gradually give way, and it is often difficult after death to detect more than a slight redness of the bronchial mucous membrane. The inflammation sometimes, however, terminates in œdema glottidis, and but rarely in the exudation of a false membrane.

I have mentioned the chief features of this kind of laryngitis, first, because it is very common in its slightest degree, and is by no means rare, even in its utmost severity; and, secondly, because it is not usually a very sthenic disease, or, to speak more correctly, it does not present so very high a type of inflammation as that which is characterized by lymphatic effusion, and is, therefore, an example of that degree of this morbid process comparable to the outside circle in the inflamed portion of the frog's foot. The proof of this lies in the absence of exudation,—the usual complication being bronchitis, not pneumonia,—the longer duration of the disease, and its frequent termination in serous effusion into the glottis, or by passing into the chronic form of laryngitis.

It will be expected, then, that the solution of caustic should act well in such cases, and so it does; but perhaps in none is a greater amount of discrimination necessary in the adaptation of the strength of the solution to the severity of the inflammation which may be present, as well as in choice of the proper time for commencing the topical measures. For it must not be thought that I advocate restriction to any one remedy, local or general, in the treatment of this disease. In the severer forms of the affection especially, depletion of some kind will at first be necessary to check the violence of the inflammation, and an emetic will be useful in restoring the moisture of the mucous surface. It is after the use of both these remedies that the topical application is alone admissible, nor can it even then be employed to the exclusion of other means. In children it will be especially necessary to repeat the emetic several times during the progress of the case, and in very few will the judicious practitioner refrain from the use of counter-irritation to the outside of the throat while he is proceeding with the topical treatment internally. It is, however, with the latter that I have specially to do at present, and therefore to the management of it I shall, in a great measure, confine my remarks.

Contrary to what might, *a priori*, be expected, the result of those experiments I before alluded to is, that the more intense the degree of inflammation of the laryngeal lining, the weaker ought to be the solution of silver applied to it. In those cases in which the intensity of the inflammation has never been great, or in which, as is more likely to happen, the primary violence of the disease has been subdued by other treatment, a stronger solution may be used with advantage. Its first effect, when thus judiciously applied, will be to coagulate the albuminous film upon the surface of the membrane which has been stripped of its epithelium, and thus to cover and protect it. Another, and almost simultaneous effect, is to stimulate the basement membrane to form new epithelium, and to secrete new mucus, and thus the artificial film of coagulated albumen is by-and-by replaced by a more natural covering, and the surface is lubricated by its appropriate moisture. If, then, a renewal of the morbid process could be prevented, a cure would already have been accomplished, but this is seldom or never the case. The good effects of the topical application wear off in a few hours, and the former abnormal phenomena may even in that time have re-appeared in nearly equal severity. The treatment must therefore be continued,—the touching of the larynx must be repeated frequently for some days, and indeed until all the symptoms of laryngitis have completely disappeared.

In some severe cases of this kind, especially in adults, there is great danger of a chronic thickening of the laryngeal mucous membrane being left behind, and of the voice being thus permanently impaired. It may, therefore, in such cases be a very good precaution to give a little mercury towards the end of the acute attack; but whenever the mouth begins to be affected, the topical application of solution of caustic must be stopped; for the laryngeal lining, especially at its upper part, is then far too vascular and irritable to bear the touching, and its only effect would be to cause still greater excitement of the part. It is for this reason chiefly, and because I put considerable faith in the topical remedy, that I should recommend the mercurialization to be postponed until the termination of the acute stage. After the mercury has had its required effect, it is often a good plan to repeat the topical treatment for a time, when its efficiency will be found very great in restoring the tone of the voice, and fitting the patient to bear a change of his apartment in the first place, and, ere long, removal to the country.

2. Regarding the second kind of laryngitis, viz., that which forms

part of the diphtherite of Bretonneau, I have little to say, not having met with the affection in practice. It seems generally to be connected with an atonic state of the general system; the whole fauces, the gullet, and the stomach itself, are often affected at the same time, and in the same way, as the lining of the air-tubes. The exudation, which in these cases occurs after a short stage of intense erysipelatous redness, consists almost entirely of albumen, and covers the whole of the parts affected, sometimes in considerable thickness. It is, therefore, in many respects different from the more local, firmly adhering, lymphatic exudation of true croup.

This seems to be a common affection on the Continent, especially in Paris, and also in New York according to Dr. Horace Green, who tells us that solution of caustic acts admirably as a topical application in such cases. It seldom, however, occurs in this country, at all events in this city, except as an occasional, and happily rare, form of epidemic.

3. True exudative croup is altogether a different disease. It appears in very sthenic conditions of the general system; the blood is invariably rich in fibrine and corpuscles, and the exudation which forms in the larynx and trachea always contains, and is sometimes chiefly composed of, fibrine. It is, moreover, a purely local affection, seizing at once on the larynx or trachea, and confining its chief violence to one or both of these organs. It is, besides, more frequently complicated with pneumonia than with bronchitis,—another proof that the degree of inflammation present is very intense, and to be compared with that which exists in the web of the frog's foot around the puncture of the red-hot needle. And my experience of the effects of the solution of caustic, in cases of croup, justifies this comparison, and confirms the important inference that such treatment is unsuitable for the degree of inflammation present in them; for I have always found the symptoms of congestion in the laryngeal lining, such as pain and difficulty of breathing, increased by the application of even a weak solution of nitrate of silver, and the very act of applying the solution is hurtful in these cases: the sponge generally brings away part of the false membrane upon it, and leaves the delicate and highly vascular tissue beneath exposed, and often bleeding. Pain, anxiety, and, I fear, increased exudation, and sometimes ulceration, are thus produced, the original disease being thereby aggravated.

To show that I have not been too easily led to these conclusions, and to give force and point to what I believe to be a very important statement, I shall relate the two following cases, which I venture to think interesting in many points of view, and which I have, therefore, selected from my case-book. One of them illustrates the action of the topical application in an adult case, and the other in that of a child.

Case 1.—The subject of this case was a gentleman past the middle period of life, and, before the illness which I am going to describe, particularly strong and healthy.

One evening of the winter before last he was suddenly seized with difficult respiration, tightness in the throat, harsh, dry, whistling cough, and high fever. All the symptoms of croup, indeed, became very soon but too well marked; and, a few hours after the apparent commencement of the attack, the following were the physical signs which presented themselves:—The number of respirations in the minute was much increased, and yet the feeling of oppression on the chest remained unabated, so incomplete was the inflation of the lungs: indeed the respiratory murmur was but feebly heard in the upper parts of the chest, while the bronchial sounds were dry and snoring in their character. In the trachea the inspiration was long, and accompanied by the harsh sound of the air passing along the dry and narrowed tube. A little higher up, and chiefly at the commencement of inspiration, the glottis was heard vibrating so as to occasion a stridulous sound.

When the patient spoke he suffered great pain, and increased feeling of anxiety. His voice was feeble and broken, being at times deeper, and then suddenly much slighter, than his ordinary tone.

There could, therefore, be no doubt that this was an instance of acute tracheal croup, accompanied by exudation. It was treated as such, by emetics, purgatives, hot baths, bleeding, antimony, and calomel, with a blister on the trachea, and in the evening I commenced to apply a solution of twenty grains of nitrate of silver in an ounce of water to the interior of the affected organ; but each application gave great pain and uneasiness, and increased the sense of suffocation. The violent fits of coughing which were thus produced undoubtedly occasioned the separation of small portions of the false membrane, but that was no improvement, since the surface thus exposed was tender, unprotected, and often bleeding. I next followed Dr. Horace Green's example, and increased the strength of the solution twofold. This, however, only made matters worse, and indeed the patient himself began to dread the repetition of the proceeding. Still my faith in the remedy was not completely exhausted: I determined, before abandoning the topical treatment altogether, to use a weak solution of the nitrate of silver; I therefore diluted it to ten grains, and ultimately to five grains, in one ounce of water, and yet I was unsuccessful. It was, indeed, too apparent to me that the larynx was not in a state to bear either the stimulant solution, or the presence, for however short a time, of the sponge by which it was applied; I therefore gave up the topical treatment entirely at this time, and used more ordinary measures. The patient was still further depleted, and more decidedly mercurialized. He was likewise frequently blistered during the next month, by the end of which time he was much improved, but still had a good deal of hard, whistling cough, dyspnœa when he moved about, and great pain when he spoke, referred to the glottidean region. The tone of voice was weak, but not unusually hoarse.

The most careful examination of the chest still showed that the lungs were free from disease. The respiratory sounds in the trachea were loud, harsh, and dry, and were accompanied by a pretty constant râle, as if there were one or more valvules of exudation matter still adhering to the walls of the trachea. The vibration of the glottis in breathing and coughing was not so free as formerly, indicating a degree of œdema of the organ.

On opening the mouth, the fauces were seen to be red and swollen, and the epiglottis was felt by the finger covered with soft and doughy mucous membrane.

After careful consideration of all these circumstances, it was determined, in consultation with my father, that two caustic issues should be opened, one on each side of the thyroid cartilage; that the iodide of potassium should be administered in decoction of sarsaparilla; and that I should again apply the caustic solution to the interior of the larynx and trachea, now that the inflammation had passed the acute stage. Under this plan of treatment the patient made daily advances towards health, and was soon able to take exercise out of doors, wearing a respirator.

The effects of the topical treatment during this latter period were as manifestly beneficial as formerly they had been hurtful. The strength of the solution was at first only ten grains to the ounce of water, but was gradually increased to a scruple in the same quantity. After each application the patient found that in a short time his breathing was freer, his cough less frequent, and his voice stronger; but this improvement at first lasted only about forty-eight hours, at the end of which period the application was always renewed with the good effect of sustaining the improvement. By-and-by, however, the intervals were lengthened with impunity; the gentleman spent the summer at the coast, and is now perfectly well.

I think it worth mentioning, in conclusion, that I still see this gentleman occasionally for a feeling of dryness in the throat, which nothing but the stimulant application seems to relieve. This appears to be a very common state of matters after the caustic solution has been applied to the throat for any length of time. Hence I now and again see a number of my old laryngeal patients who have been cured of all their symptoms with the exception of this feeling of dryness, and it is often both intense and annoying. I believe the most of them would disregard it were it not for the fear of a relapse into their former state, and I therefore encourage them to forget it if possible, and to use such means as rubefacient liniments externally, or some simple gargle. Still it must be confessed that no remedy for this disagreeable feeling is so effectual as the solution of caustic, and if it be not too strong, and if the intervals of its application be not injudiciously short, I do not think its continued use in the cautious manner just indicated will do any injury to the mucous membrane.

But to return from this digression;—the case which I have narrated proves, as clearly as any single case can prove, that the topical treatment is unsuitable during the acute stage of exudative croup: and, were it not for the inconvenient length to which it would protract my paper, I could relate many others, the subjects of which were children, and which all go to corroborate the above conclusion. I have in these cases invariably seen good reason to stop the topical treatment if I had begun to use it early in the disease, because I found that it retarded, if it did not prevent, their favourable progress. One of the most marked of the cases to which I allude was the following, and I relate its chief features here because it is the last case of acute exudative croup in which I have used, or intend to use, the solution of caustic.

Case 2.—The patient was a girl, four or five years old, attended by my friend, Dr. Peter Stewart, of Eglinton-street.

This little patient was suddenly seized with symptoms of acute croup, about the middle of last winter. Dr. Stewart was immediately called in, and at once instituted the most judicious measures to check, if possible, the untoward progress of the malady. Among other things he applied a solution of caustic to the pharynx and upper part of the larynx.

Unfortunately, however, as sometimes will and must happen, under the best treatment, the patient's state rapidly became worse, and Dr. Stewart requested a consultation with my father; and a doubt occurring to the former that possibly he might not have passed the probang fairly into the larynx, he likewise asked me to see his patient and apply the solution of caustic for him.

The child had been about forty hours ill when I saw her, and was evidently in a most dangerous condition. The exudation was very abundant in the trachea, as evinced by the sharpness of the inspiratory sound heard over it, and by the faintness of the vesicular murmur in the lungs; the glottis, however, vibrated during coughing and speaking; and was, therefore, free of œdematous swelling. The pulse was quick, but not feeble; the surface of the body was hot and moist; and the face was of a dingy hue, the lips being almost livid.

I introduced the probang, the sponge of which had been moistened with a solution of twenty grains of caustic in an ounce of water, so easily through the rima glottidis, that I feel quite convinced that Dr. Stewart, who is in the daily habit of using this plan of treatment in many other cases, especially in hooping-cough[*], had likewise reached the seat of disease, and that there had been a fair trial of the topical treatment in this case from the commencement. I repeated the application thrice

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[*] This mode of treating hooping-cough was originally proposed by myself in the 'Edinburgh Monthly Journal of Medical Science' for 1849, and is slowly, but I trust, surely gaining confidence both with the profession and with the public. For the explanation of the theory of this mode of treating hooping-cough, I refer to my original paper; but I hope the following numerical results of the practice will not be uninteresting to the readers of the 'Dublin Quarterly.' M. Joubert, of Cherion, has used the topical treatment in sixty-eight cases of hooping-cough, with the following results (see the Bulletin de Therapeutique for January, 1852; and also the Edinburgh Monthly Journal for May, 1852, p. 257.)

A speedy cure resulted in	40	Cases
Great relief, and shortening of the disease, occurred in	20	,,
No change was effected in	8	,,
Total, . . .	68	

The cases of this disease which I have myself treated, from beginning to end, in this way amount at present to 57, in all of which a more or less speedy cure was effected, as the following statement will show:—

31	Cases were cured in from	10 to 14 days.
19	,, ,,	3 to 4 weeks.
57		

Combining these two Tables, we have, in the first place, 125 cases of hooping-cough treated in this manner without one death. Only 8 out of the whole number resisted the treatment; of the rest, 78 were speedily cured, and 39 were greatly relieved and shortened. What better proof can be asked of the efficacy of the topical treatment of hooping-cough; and what now prevents its general adoption by the profession? Am I not warranted in believing that were it so adopted much suffering would be saved and many lives would be prolonged beyond the first, the most interesting, but perhaps also the most dangerous, epoch of human existence?

during my first visit, and Dr. Stewart renewed it again in the evening. At my second visit, next morning, I used a stronger solution, viz., one of forty grains to the ounce of water. After each application the child seemed a little easier, perhaps from the passage being partially cleared by the sponge and by the child's own efforts, but she always became worse in a very short time; and although all the ordinary means had been carefully used during the whole progress of the case, besides the topical measure, still the child's state was evidently becoming very hopeless. The pulse was more rapid, but not as feeble, as might have been expected, and the colour of the skin was more dingy, indeed it was almost livid. The child died that evening, and I regret to add, that no inspection of the body was permitted.

In this case the failure of the topical treatment was far too marked to occur in any one's practice without exciting very serious reflections regarding its employment in the disease of which it was an example, and it led me to look back to my notes of other similar cases, as well as to institute some such experiments as that which I formerly narrated. The results of these observations and reflections have been to convince me of the total unsuitableness of the treatment in question to acute cases of exudative croup.

But I may here be met with the objection, that if, in my cases of croup, the topical method was unsuccessful, a very different result ensued in Dr. Horace Green's cases. This impression, however, will not, on examination, be found to be so correct as many may be inclined to think. Nor is it, in my opinion, detracting from Dr. Green's merit to hold that it consists in having effectually directed attention to the general subject of topical applications to the interior of the larynx rather than in recommending that treatment in cases of croup.

Dr. Horace Green illustrates his little work on croup by thirteen cases. He may possibly refer to others throughout the work, but these are the only examples fully related, so that they can be judged of independently by the reader; hence they are carefully numbered so as to permit of easy reference. Of these thirteen cases, two are quoted from Mr. Ryland's work on the larynx, chiefly for the sake of the account given by that author of the morbid appearances after death. In these, of course, the topical treatment was not used, so that the cases which illustrate this treatment given by Dr. Green are reduced to eleven. Nor am I convinced that these were all cases of true exudative croup; nay, I think it is certain they were not; for No. V. was a mere hoarseness, and No. VIII. was a spasmodic affection of the glottis which came and went without any symptom of croup at all. Nos. II., VII., and X., were apparently cases of acute œdema glottidis; leaving only six cases the symptoms of which resemble those of croup. Even some of these six have more the characters of diphtheritis than of croup, and in one of them (No. XIII.) the affection followed measles. In only four of the six cases was the disease fully developed, and of them one-half died. But, supposing that all the eleven cases related in this book were really cases of croup, more or less severe, I do not think that the mortality among them, viz., three deaths in eleven cases, was less than it generally is in the ordinary run of croupy cases occurring in the better ranks of life, and treated in the usual way; and therefore it follows that Dr. Green's experience, so far as we have it in his work on croup, does not show that his success in the treatment of cases of that disease was increased by his using the topical applications to the interior of the larynx; for he very properly used other measures as well, and the result has been a mortality not at all less than if he had neglected the topical treatment altogether. I consider it no small corroboration of my opinion, in regard of this point, that M. Trousseau states in the 'Union Médicale' for 1851, No. 100, as one reason of his superior success of late years in the treatment of severe cases of croup, that he has discontinued the application of a strong solution of caustic to the larynx and trachea, which he used formerly to insist upon.

The termination of acute inflammation of the laryngeal mucous membrane, whether that inflammation had been of the simple or of the exudative type, in œdema of its loose subjacent tissue, is an event so remarkable and important that I have reserved until now the few remarks which I wish to make on its topical treatment. I believe that the occurrence of the lesion referred to is by no means infrequent, and that it is always attended with imminent danger to the patient's life. The rapidity with which the inflammatory stage sometimes terminates in this manner is sufficiently remarkable to have struck every one who has observed cases of the kind. In some of these it is the result of constitutional debility, however that may have been produced; while in others it seems referrible to a peculiarity in the nature of the morbid process itself. In the former class of cases it generally arises during the progress of some exhausting disease, such as typhus fever, or towards the end of exudative croup itself when it is always a formidable and often a fatal complication. And even when it occurs as a more primary disease, the inflammation of the mucous membrane appears to be reduced in intensity by the very occurrence of the serous effusion, although it had previously been even of the exudative type. From what has been formerly stated, then, regarding the action of a solution of caustic applied to a subacutely inflamed mucous membrane, it might, *a priori*, be expected to produce a beneficial effect on the œdematous glottis; and this expectation has been remarkably fulfilled in my experience, as the following instance will sufficiently exemplify.

Case 3.—A young child, of eight months old, had severe hemorrhage from the gums after division of them over the incisor teeth, and in the exhausted state which followed, he caught cold, and became affected with the ordinary symptoms of croup, which were chiefly combated by an emetic, counter-irritation over the throat and chest, and by repeated small doses of calomel. But very soon the chief, nay, only symptom became that of impeded respiration. The child's efforts during inspiration, the dry, whistling sound which accompanied it in the trachea, the nearly total absence of vesicular murmur in the lungs, and the short expiratory sounds, taken along with the previous state of the little patient, rendered it evident, that œdema glottidis had occurred; and if to this it be added that the pulse was feeble, the patient pale and exhausted, and that he could hardly be made to receive nourishment,—his extreme danger will not be questioned.

I introduced the probang down to the glottis, but not through the rima, owing to the swelling of its margins. The strength of the solution used was thirty grains to the ounce of water, and it was applied three or four times at short intervals. The effect was soon apparent. Some coughing, and the expulsion of tough muco-albuminous matter first followed, and then the child became quiet, the breathing was freer, although, of course, there was still considerable obstruction at the glottis. In a few hours this obstruction seemed to be increasing, and the application of the caustic solution was again renewed in the same way, and with equally favourable results. The calomel was continued, and a warm water enema was administered, after the action of which the child took the breast, and slept for a short time. The future progress of the case was marked by a gradual but steady improvement. The calomel was soon stopped, the bowels were duly regulated, and the topical applications were persevered in daily for two or three weeks, by the end of which time all obstruction to the breathing, as well as the cough, and even a degree of hoarseness which had latterly been observed, had completely disappeared, and the child's general health rapidly improved.

[In another case of an infant, only two months old, to which Dr. W. was called, the symptoms at first appeared only those of a slight cold, but which gradually assumed a frightful degree of intensity. Dr. Watson touched the glottis with a strong solution of caustic, which assisted in expelling a quantity of ropy mucus, and relieved the respiration. After a purgative enema, and a tepid bath, the touching was repeated, with manifest improvement: only four or five repetitions were necessary, and the child was well in a few days. Dr. Watson then continues:]

On reviewing the whole subject, then, the following are the principal conclusions to which my observations, experimental and clinical, have conducted me:—

1st. The solution of the nitrate of silver, when applied to an inflamed mucous membrane, acts differently, according to the intensity of the inflammation that may be present; in the asthenic varieties it operates as a stimulant of the capillaries of the part, and likewise of its secreting apparatus, while in the sthenic variety it increases the congestion of the membrane, chiefly by diminishing the fluidity of the blood in its vessels.

2nd. In acute laryngitis in which there is no false membrane, and probably in diphtheritis in which there is an albuminous exudation, the local application of solution of caustic, varying in strength inversely in proportion to the intensity of the inflammation, may be employed with more or less speedy benefit.

3rd. During the violence of true exudative croup the stimulant application to the part affected is injurious, but when the disease begins to yield to antiphlogistic and other treatment, it may assist in the cure.

4th. Œdema glottidis, whether occurring as a primary disease, or as a complication of other morbid states, is always speedily relieved, and in some cases effectually cured, by the application of strong solutions of the nitrate of silver to the œdematous organ.

And 5th. It follows as a corollary, derived partly from the foregoing conclusions, and partly from the results of my experience of the topical treatment communicated to 'The Dublin Quarterly Journal' in November, 1850, that the solution of caustic acts beneficially in only one, viz., in the asthenic variety of laryngeal inflammation: for it matters not whether such has been the original character of the affection (acute but asthenic cases), or whether it has become so under the combined influence of time and general treatment (chronic cases).—*Dublin Quarterly Journal, August*, 1852, *p.* 48.

26.—*Topical Medication of the Larynx.*—Dr. **Cotton** brought under the notice of the Medical Society of London a new method of applying a solution of nitrate of silver, or any other substance, to the laryngeal mucous membrane. After making a few remarks upon the practice of introducing a piece of sponge *within* the larynx, which he believed to be not only practicable, but, in the majority of cases, useful, and always with proper precaution, harmless, he had, nevertheless, become convinced, from a number of experiments at the Consumption Hospital, that it was better merely to drop the solution into the laryngeal opening. This was easily accomplished by means of the simple instrument he presented to the Society, which was made by Mr. Coxeter, and consisted of a pair of forceps slightly curved, and having a small piece of sponge attached to one of its blades. By depressing and slightly drawing forwards the tongue by the ordinary spatula, the extremities of the blades might be held over the larynx, and at the proper moment the contents of the sponge could be squeezed into it. Dr. Cotton had used it successfully in a considerable number of cases, and had found that it was generally less disagreeable to the patient, and produced less spasm and cough, than the ordinary method of passing down the sponge itself; whilst it possessed the obvious advantage of making it impossible that the sponge could ever fall into the larynx, the closing of the forceps effectually holding it. The sponge would contain about half a drachm of fluid, nearly the whole of which might, if desired, be applied to the laryngeal membrane and its neighbourhood, the cough which invariably followed its use always ensuring its diffusion.—*Lancet, June* 26, 1852, *p.* 617.

27.—*New Mode of applying Medical Solutions to the Larynx.*—Dr. **Theophilus Thompson** exhibited to the Medical Society of London an instrument which he is accustomed to use for the purpose of making applications to the interior of the larynx. It is a syringe having a small glass cylinder and a silver tube, slightly curved, and at its extremity expanded into a globe about the third of an inch in diameter, perforated all around with numerous very small apertures. The piston rod is surmounted with a ring, into which the thumb can be introduced, so as to work the instrument steadily. The tongue of the patient being held down with a spatula or with the finger (whether the epiglottis can be seen or not), the extremity of the tube is readily introduced, and the solution injected. The conditions of larynx in which Dr. Thompson finds most occasion for this instrument, are those which are benefited by the nitrate of silver; and he usually employs about half a drachm of the solution recommended by Dr. Horace Green, containing two scruples in the ounce of water. Dr. Thompson remarked that patients and practitioners seemed agreed in the impression that advantage is derived from such an implication, and he considered this mode of introducing it less rough and disagreeable than the curved probang with a sponge at the extremity, as used by Dr. Green, and more precise in the direction of the fluid than the forceps, having one blade armed with a sponge, as ingeniously contrived by Dr. Cotton. Dr. Thompson was indebted for the suggestion to Dr. Boott, who mentioned to him having seen in an American newspaper the notice of a syringe employed for the same purpose by Dr. Asa Warren, of Boston.

Dr. Ogier Ward said that some time ago he had contrived a syringe similar to the one exhibited by Dr. Thompson, but he had not made it public.—*Lancet, June* 19, 1852, *p.* 594.

28.—*Cauterization of the Glottis in Hooping Cough.*—M. JOUBERT has published the results of his experience of this mode of treating hooping cough. He has treated in all 98 cases in this manner, but he excludes 30 of these as not being worthy of reliance. The remaining 68 cases he divided into three series, according to the period at which the treatment was commenced. Of these, the general results were, that in 40 the cure was rapidly effected, in 21 a marked relief was experienced, and in 7 cases only the treatment failed altogether.—*Provincial Med. and Surg. Journal, May* 26, 1852, p. 278.

29.—*Tannin in Hooping Cough.*—DR. V. BREWNING employs tannin in the following combination, in cases of hooping cough:—℞. Tannini, gr. 1-6th; acid. benzoic, extract. belladonnæ, utrq., gr. 1-12th; pulv. rhei, gr. iij.; pulv. gumm. acaciæ, gr. xij. M. fiat pulv. The powder may be given three or four times a-day. For a very young child, half the dose twice daily will be sufficient. In a few days the severity of the symptoms usually diminishes, and the character of the attack changes. If the *primæ viæ* require clearing, an emetic dose of antimonial wine should be first administered. If the disease does not yield in a few days, and the periodicity of the attack is well marked, one or two grains of hydrochlorate of quinine [The disulphate would, doubtless, be equally efficacious.—ED.] may be substituted for the rhubarb. He recommends as a domestic remedy, the simultaneous use of a tea of the flowers of the common primrose, with equal parts of inspissated crab-juice and sugar-candy.—*Provincial Med. and Surg. Journal, Sept.* 15, 1852, *p.* 483.

30.—ON THE TREATMENT OF CROUP BY WARM VAPOUR AND EMETICS.

By Dr. William Budd, Physician to the Bristol Infirmary.

[Before entering on the treatment of this disease, Dr. Budd makes a few observations on some cardinal points in the morbid anatomy and pathology of two specimens taken from fatal cases of the disease.]

In both specimens, a concrete, dirty-white exudation lines the windpipe from the epiglottis downwards, covering the chordæ-vocales, blocking up the sacculus laryngis, and forming a tough, continuous, tubular membrane. In passing down the windpipe, it becomes gradually less and less tenacious, until at length it passes into mere mucus, a little above the bifurcation of the air-tube. It is important to observe that, in the same direction, the false membrane becomes less and less adherent to the surface on which it lies. In the lower part of the trachea, in these specimens, it floats loose and detached, while in the larynx it adheres so closely that it cannot be stripped off entire. So that, by a sad fatality, the morbid product is the harder to dislodge the narrower the channel it serves to obstruct. This is, I believe, always so; and the fact is one, I need scarcely say, of very great importance in many ways.

Pursuing your examination, you will trace the same false membrane extending by direct continuity over the fauces and velum, and passing thence into the posterior nares. These are its limits in the specimens before you. But cases occur, not unfrequently, in which it extends, by direct continuity also, on the one hand down the gullet to the cardiac orifice of the stomach, and, on the other hand, into the minutest ramifications of the air-tubes. In an opposite extreme it is sometimes limited to the larynx itself, covering scarcely more than a square inch of membrane.

Although identical in nature, the morbid product is apt to vary in extent, therefore, in different cases. Dr. West has remarked, that "the false membrane is much oftener found in the larynx than in the trachea, and that it is in both much more frequent than in the bronchi." My own experience entirely coincides with his. The membrane would appear to be first formed in the fauces and larynx, and only to be developed on the remainder of this wide mucous tract by extension of the morbid process. It is a singular circumstance, and one which could not fail to be of great interest, could we see its true significance, that when the disease penetrates to the lung, it often affects the tubes of the right lung exclusively, the false membrane passing down the right bronchus, and leaving the left untouched.

The histological and other characters of the exudation itself are very important. If you examine a portion of the false membrane under the microscope, you will see that it is essentially made up of cells or corpuscles lying in a granular blastema. These cells bear, as you will remark, a very close resemblance to the common pus-corpuscle. Pus-corpuscles are, in fact, as I have endeavoured to show you at greater length elsewhere, none other than these same cells, dead,—most probably in a higher state of oxidation, and otherwise chemically altered. Here and there, however, a stray cell is seen, marking by its fusiform shape a tendency to rudimentary but abortive development.

The most important character of the blastema in which the corpuscles are imbedded, is the large number of fat-granules it contains. The presence of this large quantity of fat in the morbid product, besides presenting another point in common with pus, is probably connected in some way with its low capacity for organization.

These characteristics are constant in the false membrane of croup. They are also occasionally met with in inflammatory exudations from other surfaces; especially in such as occur under direct exposure to air, or as the effect of malignant poisons,—or, in weak and cachectic persons, whatever the cause of inflammation. Such exudations have, in fact, received the epithet of *croupal*, in testimony of this likeness to the croupal type.

As a group, they are especially characterised by a proneness to degenerate into pus, and other kindred fluid products, with a tendency to the development of corrosive, and, in some cases, of still more noxious qualities.

This close affinity of the exudation to pus is, in croup, a character of of great moment; since, in virtue of it, a product, which was at first, solid and adherent, and firmly choking up the air-channel, may, by a slight change of conditions, give place to a fluid secretion, offering no serious mechanical obstacle to the ingress of air, or to its own expulsion. In cases of recovery, some such secretion always supersedes the croupal, and is, in fact, the chief instrument of that separation from the surface beneath which prepares the way for its ejection.

The condition of the mucous membrane itself varies much in different cases, and in different stages of the disease. As a general rule, it presents less vascular redness than is seen in other forms of inflammation of the same degree. Of this, two different explanations have been offered. One, that the gorged capillaries are relieved from their distension by the outpouring of the effused lymph; the other, that they are choked up with white products of the same nature as the exudation itself. Which of these explanations is the true one, or whether either adequately represents the fact, I will not pretend to decide.

Besides being inflamed, the larynx and under surface of the epiglottis are generally found fretted and ulcerated, and a similar but still more extensive destruction of substance often affects the tonsils also. These alterations are, in great part, the result of the corrosive action of the morbid product. The material of the false membrane is no sooner poured out than it becomes the seat of catalytic changes, which being communicated to the living membrane, (whose power of resistance is lowered by disease, and whose elements are already prone to dissolution), lead to its disintegration. Direct exposure to air, the presence of sufficient moisture, and the heat of the underlying, diseased surface, all concur to give activity to these chemical changes in the morbid product.

So much, then, for the local changes in croup. If you consider their very definite character, as well as their limitation to a particular tract, you will see at once that we have to deal with a disease of a very special nature. The almost exclusive occurrence of this form of croup in very early life, and, still more, its occasional epidemic prevalence, are facts which admit no other view.

Bearing this in mind, you will not, therefore, take every case of catarrh which may happen to be attended with croupal hoarseness, to be a case of genuine croup, and still less will you confound with the disease before you, that equally specific form of inflammation of the same surface which frequently occurs in the adult, under the name of croup, and which is, in fact, nothing more than erysipelas affecting a mucous membrane.

I draw your attention to these distinctions, not only because they are important to prognosis, but because a knowledge of them is essential to the appreciation of the effects of treatment in any given case.

After this account of its morbid anatomy, it is almost superfluous to add, that this disease of the windpipe is one which derives almost all its importance from situation. As a disease of a mucous membrane, it is often trivial enough; but, as mechanically hindering the ingress of that wonderful agent which quickens the flesh with living powers, croup extinguishes life in its very source.

The mode in which death is brought about, is painfully interesting to watch. In the language of technical writers, it occurs by asphyxia.

Perhaps no greater error *can* be committed in the treatment of this disease than persevering too long with lowering measures. The whole effort of contending with the impediment which obstructs the breath, falls on the muscular force, and the issue in death or recovery may depend on the strictest care and economy of that feeble remnant of it, which, in obedience to a blind, but irresistible impulse, is still struggling on in the interest of the other powers.

The time during which the struggle for life is maintained in fatal cases, depends much, of course, on the greater or less rapidity with which the air-channel is blocked up, as, also, in some measure, on the degree of muscular power of the patient.

[Dr. Budd then discusses the treatment, the two primary objects being first to promote the separation and expulsion of the false membrane; and, secondly, to prevent the re-formation of it. It struck Dr. Budd that both these objects would probably be found in the suitable modification of the atmosphere breathed by the patient. Dr. Budd observes:]

There is, indeed, much reason to believe, that the effect of air, and especially of the oxygen it contains, in keeping up inflammation, (itself a process of rapid oxidation), in already diseased parts, as well as in exciting inflammation in parts whose power of resistance to common chemical agency is, through some cause, lowered, is only beginning to be appreciated.

Yet there would seem to be little doubt, not only that this agency of the air is most large and influential, but that a knowledge of it furnishes a principle fertile in applications as well to the cure as to the prevention of the disease.

As the air is more injurious the colder it is, it naturally occurred to me, that the first object in the treatment would be to raise the temperature of the air breathed by the patient to a suitable point. The second was to saturate the air thus warmed with watery vapour. On many grounds, indeed, it seemed to me not improbable, that—whether by modifying the physical constitution of the false membrane itself—or, perchance, by promoting a more serous secretion beneath it, or in both ways at once—the moisture thus generated might specially aid in the separation and expulsion of the morbid product, and possibly also prevent its being formed anew.

It is for more enlarged experience to say to what degree these important objects are likely to be realised by these simple means.

The results we have as yet obtained are perhaps too few to build upon securely. Nevertheless, as far as they go, they surpass the best expectations that could have been formed of this method of treatment. If they warrant nothing more, they at least encourage to a further trial of it.

The mode of proceeding was simple enough. The sick child was placed in a bed, closed on all sides by a double curtain. Into this bed was introduced a large earthenware pan nearly filled with all but boiling water; and into the water was plunged from time to time, a heated brick, for the purpose of disengaging steam, care being taken to have the brick completely submerged. By this means, the atmosphere within the curtain was constantly kept at a temperature of from 75° to 80° Fahr., and surcharged with vapour. Where it was practicable, the mother was placed in the bed with the child in order to reconcile it to the strangeness of its situation. As convalescence approached, this was on several occasions found to be a useful precaution.

The only other measure adopted, was to give an emetic from time to time, whenever the struggle for breath seemed more than commonly urgent. Not, however, for the sake of the antiphlogistic effect of the antimony or other agent employed, but to help, by that mechanical succession which the act of vomiting causes, and which daily experience shows to be so effectual for this end, in the expulsion of the morbid product. This is the great and paramount use of emetics in the treatment of croup, and it is one the more to be valued, *since there is no substitute for it.*

Having entered at such length into the motives which led to the adoption of this plan, it only remains for me to relate, with as much brevity as I can, the results obtained by its employment.

Case 1.—Edwin Poole, a fine robust child, two years and a half old, was brought to the Bristol Royal Infirmary, on the 15th March, 1851. He had been suffering from severe cold for about a week, but, from the mother's account, it was not until the morning of the 15th, the day of admission, that decidedly croupal symptoms had set in.

On his arrival at the hospital, at about four p.m., his state was already very urgent. The distress of breathing was extreme; the face was livid and bloated, the respiratory murmur scarcely audible. It was plain that the ingress of air into the chest was all but intercepted.

Now and then, in a paroxysm of still greater distress, actual suffocation seemed to be impending. The breathing was loud and stridulous; the cough croupal and characteristic, A layer of white exudation, which visibly coated the velum and fauces, left no doubt as to the nature of the laryngeal obstruction. The pulse 130 in a minute. The only favourable circumstances in the case were, that the heat of the surface still kept up, being in fact rather above than below the natural standard, and that the respiratory muscles still contended vigorously against the impediment which opposed the entrance of air through the windpipe.

As soon as the child was placed in bed, an emetic was administered, two leeches were applied to the top of the sternum, and ten grains of bicarbonate of potash in solution were ordered to be given every half hour.

At five o'clock, as he was growing rapidly worse, two other leeches were applied to the throat; and the fauces, and as far as it could be reached, the larynx, also, were freely "swabbed" with a saturated solution of nitrate of silver.

These measures were, like the former, followed by no relief, and at half past five, when I saw the child for the first time, he was still growing steadily worse. The breathing had become still more difficult, and the lividity deeper.

As three children, who were admitted in much the same state, and treated by the common methods, had lately died in the house, I determined in the present case to make trial of the plan already described.

The child's bed was accordingly converted into a vapour bath, and he was ordered to have an emetic every four hours. The strength to be supported by good broth, as need might be.

From the moment of beginning to breathe the new atmosphere, the child began to mend. At the end of two hours the change for the better was very striking.

The breathing was much easier and less stridulous, and the lividity of countenance had much diminished. Many hours of tranquil sleep were obtained through the night.

The emetic was administered two or three times, and on each occasion the vomiting was attended by the expulsion of distinct flakes of false membrane.

At one p.m. on the following day every alarming symptom had disappeared. The breathing had become much more free, and there was not the slightest shade of lividity remaining.

The inspirations were 28, and without labour; the pulse had fallen to 98; the cough had become loose, and had almost entirely lost its croupal character.

In the evening of the same day, he was so well as to be sitting up in bed at play with his toys.

From this time his recovery was rapid and uninterrupted. The vapour was continued for another day, and for two other days the child was kept in close curtains, a precaution which, from the well-known tendency to relapse in croup, it was thought desirable to repeat in all the other cases.

On the 21st the child was discharged cured.

In the next case, the course of the disease was slower, and the distress was at no time so urgent as in that just related.

Case 2.—John Winchester, 22 months old, was admitted to the Bristol Infirmary on the 30th March, 1851, labouring under croup. An attack of measles, which occurred about two months before, had left him weak and cachectic, and he was already on the books as out-patient, for the treatment of cancrum oris affecting the gums of the lower jaw.

A cough, like that of a common cold, which had existed about a fortnight, had, within the last week, gradually put on a croupal character, and, at the same time, the breathing had become more and more difficult.

At the time of admission, the symptoms of croup were fully developed. The cough was characteristic, and the breathing, which was loud and stridulous, was extremely difficult. A distinct false membrane lined the fauces and velum. The complexion was not, however, very livid as yet. The surface hot, and pulse 125. Sibilant and other catarrhal noises were audible over the chest.

The same treatment was adopted as in the former case, and with exactly similar results.

Immediate relief followed the employment of the vapour, and, in the course of six hours, all alarming symptoms had disappeared. Distinct flakes of false membrane were expelled after each emetic, with great relief to the breathing.

On the 1st of April, the breathing was quite free and natural; the cough had become loose, and had entirely lost its croupal character. The symptoms of croup proper, had, in fact, disappeared, and only those of catarrh remained. For the treatment of this, and to recruit his general health, he continued in the house until the 17th of April, when he was sent out cured.

Case 3.—Arthur Cross, a fine boy, two years old, was brought to the hospital on the 6th of April, 1851.

In the middle of the night preceding, he was seized suddenly, and without assignable cause, with hoarseness, croupal cough, and extreme difficulty of breathing. On admission, all the symptoms characteristic of croup were fully developed, and the case was considered to be very urgent. The same treatment was employed as in the two former instances. On the morrow, all urgent symptoms had yielded, and the child was convalescent. On the 10th of April he was discharged well. (May, 1851).

Since the occurrence of these cases, seven other instances of croup have come to my knowledge, in which the employment of vapour, in the manner already described, formed the principal part of the treatment. Of these seven patients, two only died. In the five others, recovery was rapid, and the employment of vapour was uniformly followed by great and immediate relief.

Of the two fatal cases, one may fairly be put out of the field, as being beyond all hope of remedy when first seen; he died, in fact, within three hours of being brought to the hospital. When admitted, he was already comatose, and a violent attack of convulsions soon followed. On dissection, the false membrane was found to extend down the right bronchus into the minutest air-tubes of the right lung, and nearly the whole of that lung was in a state of collapse, and impervious to air.

The other case did not, at first, appear quite so desperate. The symptoms of croup had, however, existed in great severity three whole days before admission, and, when the child was brought to the hospital, he was already growing drowsy, and the heat of the surface was fast failing. With every act of inspiration, the sternum and sternal cartilages were drawn so deeply in, that it was plain but little air could pass into the chest. Some transient relief seemed to follow the employment of the vapour, but the child died about twelve hours after admission. Two leeches were applied to the top of the sternum, and emetics were not given.—*Med. Times and Gazette, June* 19, 1852, *p.* 611.

31.—*Chlorate of Potass in Croup.*—[The following cases are related by Mr. E. F. SANKEY, of Beckley, Sussex, in corroboration of Dr. Budd's paper on croup:]

E. B., aged 1 year and 3 months; croup and bronchitis. After treating with blisters, salines, and ipecacuanha, which relieved the urgent symptoms, I found him very much reduced, and the circulation very languid, the blood not properly supplied with oxygen. I then remembered having attended a case of pneumonia in an infant (in consultation), when the chlorate of potash was exhibited with a favourable result. I therefore tried it in this case, and with the same happy end.

J. P.; 3 years; croup. This child was leeched and treated with calomel, salines, and ipecacuanha. After these remedies, the chlorate of potash was employed, and the change in his breathing, and the hue of his countenance, was most marked after the first dose. In neither case did the quantity used exceed a drachm and a half altogether.

I am aware, Dr. Pereira states, that this salt is found unaltered in the urine of those patients who have taken it, therefore no oxygen is given to the system; but I think a portion of it, at all events, must be decomposed, otherwise how is the alteration in the appearance, from the dusky leaden colour to the rosy healthy tint noticed in these cases to be accounted for?—*Med. Times and Gazette, July* 24, 1852, *p.* 98.

32.—*On the Oil of the Gadus Carbonarius, or Black Pollack.* By Dr. BAGOT.—[Dr. Bagot introduces this oil as a substitute for cod-liver oil, from which it is impossible to distinguish it in its physical properties. It was first brought under his notice by a gentleman of the name of Sinclair, of Mountcharles, county Donegal. Dr. Bagot remarks:]

I believe we are as yet in our infancy with regard to the number of those oils which may be used with advantage, and the administration of even the cod-liver oil requires more attention than is generally supposed, and its effects should be closely watched by the physician, who should give it in small doses, with occasional intermissions, to prevent that derangement of the digestive functions which so frequently follows its exhibition. In conclusion, I may remark, that some intelligent patients of mine said that the oil of the *gadus carbonarius* was less disagreeable to the stomach than some of the oils procured at the best establishments in Dublin; and a young medical friend of mine who had tried it with two patients, had heard from them the same observation.

Dr. Benson said, that so far as he had had an opportunity of testing the medicinal value of this oil, he could speak favourably of it. Having received a quart of it from Dr. Bagot, he selected three of the most intelligent of his patients who were then using the cod-liver oil, and gave them this new oil instead, directing them to take it at the same times and in the same quantity as the other. These all expressed themselves well pleased with it. They scarcely perceived any difference either in its immediate effects on the stomach, or on the progress of their diseases, which were different forms of phthisis pulmonalis. Dr. Benson said that of course this quantity was too little to enable him to speak decidedly about it. It ought to be tried with a greater number of patients, and for a much longer time than this lasted. But when he gave to the same patients, by way of experiment, similar doses of sweet oil and very nice linseed oil, their stomachs soon rebelled, and their progressive improvement was checked. Good trotter oil, however, was borne by the stomach pretty well, though not quite so easily as the oil now presented. He therefore considered that Dr. Bagot deserved well of the profession and the public in introducing this oil to the notice of the Society.

Dr. Jacob observed, that there was no reason in the world why this species of cod might not afford the oil of the requisite quality as well as any other; indeed, the probability was that many, if not all, oils obtained from livers of fish, possessed medicinal qualities. Even the sunfish oil, as it is called in commerce, obtained from the liver of the basking shark, might be valuable in this respect. Dr. Bagot's announcement he considered very important and well deserving of attention.—*Dublin Med. Press, June* 30, 1852, *p.* 401.

33.—*New Stethoscope.*—Mr. B. W. Richardson exhibited to the Medical Society of London a new form of stethoscope which he had recently invented. With reference to conveyance of sound, this stethoscope did not differ from other kinds, but it was much more portable and convenient. The improvement lay in the ear-piece, which was joined to the tube by means of a very simple hinge-joint, on the principle of the joint used in the enema syringe, so that the ear-piece could be folded down upon the tube when not in use, (like the top of a round table,) and could then be carried in the breast pocket without causing the slightest inconvenience. The joint was also so managed that the instrument could be used with the ear-piece standing at different angles, an advantage of some importance.—*Lancet, June* 5, 1852, *p.* 544.

DISEASES OF THE ORGANS OF DIGESTION.

34.-ON AN ERYSIPELATOUS AFFECTION OF THE THROAT.

By Dr. R. B. Todd, F.R.S., &c.

[Dr. Todd relates this case because it is a rare one, and seems to have escaped the notice of systematic writers.]

The patient is a man named George King, in Sutherland Ward, aged 64; he is tall, and of spare build, and he looks much older than the age he gives, and appears as if he had been suffering for some time from illness. This condition, he tells us, results from a severe attack of rheumatic fever, under which he suffered about a year and a half ago, which was accompanied with cardiac affection.

Since that attack, he has been more or less an invalid, from a succession of catarrhal affections up to Friday the 26th of April, 1851, on which day, while he was crossing St. James's park, he was suddenly seized with a sensation as if something had forcibly closed his jaws, and he found, to his alarm, that he could not open his mouth with the most violent effort. The affection at the same time seemed to attack the throat, and completely to prevent his swallowing. When he arrived at Pimlico he could not speak distinctly; he could not eat any dinner, and was unable to swallow some gin and water which he attempted to take. He could get it into his mouth, and it even reached the pharynx, but would go no further; it seemed, to use his own expression, "to stick in his throat," and was soon returned. He made frequent and ineffectual attempts to swallow, but, from this time till the following Tuesday, he remained without taking a particle of nourishment.

When he was admitted into the hospital, attempts were made to examine his throat, but, in consequence of the state of trismus which prevailed, the teeth could not be separated sufficiently far apart to admit of any examination being made. I will read you the following extract from notes made at the time of his admission, by Dr. Salter, the house-physician:—"On attempting to look into his mouth, I found I could not separate his jaws more than about one-eighth of an inch,—just a chink. I gave him some water, which he attempted to swallow. He performed the buccal and lingual, and, to a certain extent, the pharyngeal part of deglutition, but then, with a spasmodic effort to get it further, he choked, his eyes looked as if they would dart from his head, and up it came. Repeated attempts merely led to repeated failures. I could neither look into his throat, nor insert my finger to feel it."

When I saw him on the afternoon of the same day, I found just the same state of things,—deglutition quite impossible, the attempt to swallow followed by the forcible ejection of the food through the mouth, and in some degree through the nostrils, by a spasmodic expiratory effort.

In considering what might be the affection calculated to give rise to these symptoms, I first thought of stricture of the œsophagus; but, upon inquiry into the history of the case, it seemed very unlikely that the difficulty of deglutition could arise from this cause. The affection came on suddenly, which is not the case in the ordinary stricture of the œsophagus. Stricture of the œsophagus generally results from cicatrization of ulcers and contraction of the tissues adjacent, and such strictures are most apt to occur in the lower part of the tube not far from the cardiac orifice. Did such a stricture exist, the dysphagia would have been of a different kind. Here matters were suddenly and forcibly rejected, while, in the former condition, the food is swallowed to a certain point, and seems to encounter an obstacle at a certain situation, to which the patient points with his finger; then it is either stopped completely, and afterwards ejected, but not with the force and rapidity which we observed in this case, or, by a considerable effort, it is made to overcome the obstacle. A spasmodic state of the œsophagus might create a dysphagia like that noticed in this case; but the symptoms would scarcely have come on so rapidly, nor would the danger of choking have been so imminent, as in our patient. It seems to me, that the seat of obstruction or difficulty was not so low as the œsophagus, but rather in the pharynx, and that the food encountered it immediately on passing from the mouth.

When I had examined the patient, the existence of certain cases was brought forcibly before my mind, and I felt certain that the peculiar symptoms in the present instance resembled those which I had observed on some previous occasions with great interest. Four of such cases I have now seen. The first occurred to me many years ago in private practice. I was called to see a lady who had for some days been suffering from influenza. The principal affection, however, was great difficulty of deglutition. When she took any food, it evidently reached the isthmus faucium, but there it seemed to excite choking, in consequence of a portion apparently passing into the larynx, whence it was repelled with considerable force; so urgent was this difficulty of swallowing, that it was impossible to give her food, for fear of producing suffocation. When I looked into her throat, I saw that there was no mechanical impediment to the passage of the food into the pharynx; and all that I could observe was slight redness of the velum, and the mucous membrane of the pharynx was of a dusky hue. I found, also, that no amount of stimulation of the mucous membrane of the velum would excite contraction of the palatine or pharyngeal muscles. Believing that the phenomena depended upon an inflamed state of the mucous membrane of the throat, and not having yet learned that the proper antiphlogistic in such cases was support and nourishment, I was content to trust to leeches and blisters to the throat. But my patient became more exhausted, and rapidly sank.

The second case occurred in the person of a middle-aged woman, the wife of a respectable tradesman in Westminster. I had no difficulty in immediately recognizing the similarity to the former case. The symptoms were just the same. If fluids were given they ran down into the larynx, and were expelled with cough; and any mechanical stimulus failed to excite contraction of the velum. There was dusky redness of the velum and pillars of the palate. Profiting by former experience, I determined to exclude all depressing treatment in this case. I ordered injections of strong beef tea with ten grains of quinine to be given every four hours, and I freely applied the solid nitrate of silver to the fauces. The injections were given regularly, and the next morning I found my patient much better. She could swallow a little, and appeared stronger. I now ordered her to take beef tea and wine cautiously by the mouth, in small quantities at a time, and the quinine was also given by the mouth. In less than forty-eight hours more she had completely recovered.

The third case was that of a gentleman of fortune, whom I attended at one of the hotels in my neighbourhood, in the month of March, when erysipelas was rather prevalent about town. The symptoms under which he laboured were very similar to those which I have just detailed in relating the other cases. There was great difficulty of deglutition, but he had some power of swallowing; there was also the same tendency for fluids to pass into the larynx; the muscles of the palate showed the same want of contractile power. The mucous membrane was of the same dusky red hue. This patient was treated by support and stimulants, and the local application of nitrate of silver. As he was in affluent circumstances I gave him turtle soup and port wine and quinine. He got quite well in two days.

Not long since I was called to see a woman who was suffering from symptoms of the same character. In this, as in the other cases, it was impossible, by any amount of stimulation to excite contraction of the muscles of the soft palate; and if we administered a small quantity of fluid, it ran down into the glottis, causing violent irritation and choking. She had been ill some days, and had been treated by leeching, blisters, and mercury, as in my first case, and was in a state of extreme exhaustion when I saw her. The isthmus was quite open, and there was no impediment to deglutition except the paralytic state of the muscles. This patient died after an illness of two or three days: she died, indeed, while I was in the house.

This was the fourth case, and the patient now under treatment is a fifth. You see that they are all very serious cases, and that I am justified in calling them kill or cure cases, so brief is the period of their duration, whether for weal or woe; and although they are rare cases, you will, I am sure, appreciate the importance of being prepared for them, so that you may not be at a loss if perchance one should fall to your care. Though these are formidable cases to witness, and run their course very rapidly, terminating in death or recovery within forty-eight hours, they are, I believe, if taken soon enough, perfectly amenable to treatment, and I feel persuaded that the first case which I described would have recovered if she had been treated on a different plan. At the time that it occurred to me, I was not familiar with the symptoms—I was not "up to the disease," if I may so express myself; and I hold the opinion, that such cases would almost always recover if subjected to proper treatment before extreme exhaustion had come on.

Now, believing that our patient up-stairs was suffering in the same way as those other patients whose cases I have related, I put him on the same treatment as that which I followed in the successful cases.

Ten grains of quinine, diffused in two or three ounces of strong beef-tea, were administered every four hours, in the form of an enema. I should have also ordered the nitrate of silver to be applied to the throat, but that the state of trismus prevented his mouth from being opened.

On the following day, he was very much better, and his mouth could be opened to the extent of half an inch, and he could swallow a little liquid.

On the 30th, he could open the mouth sufficiently to enable Dr. Salter to examine his throat; and then, although considerable progress had been made towards recovery, the mucous membrane of the upper and back part of the pharynx was found of a purplish, dirty-red colour, indicating, as I thought, the existence of a low erysipelatous inflammation. There was no swelling of the mucous membrane, and no mechanical impediment to the passage of food into the pharynx, but the velum did not contract freely, as it does in health, upon the application of a mechanical stimulant. This condition of the velum depends upon one or both of two causes, viz., upon a benumbed or paralysed condition of the sensitive nerves of the pharynx, through which its muscular action is usually excited by the contact of the food; or upon the extension of the erysipelatous state to the muscles of the part, and a consequent paralysis of them.

The case of our patient King differed remarkably from the others, in being complicated with a state of trismus; which condition, however, I think admits of explanation, on the supposition that the principal source of irritation was the throat. If you call to mind the presence of the extensive nervous plexus lying outside the tonsils and isthmus of the fauces, which is called the pharyngeal plexus, and consider how this is formed, you will not be at a loss to account for this symptom. The pharyngeal plexus, as you know, is made up of fibres from the vagus, glosso-pharyngeal, and sympathetic nerves.

Irritation of the ramifications of the two former nerves may be readily propagated to the medulla oblongata, so as to affect the motor portion of the fifth nerve, which is implanted there, and by which a convulsive state of the muscles of mastication may be excited and maintained.

Our patient, as I have said, recovered to a slight extent his power of swallowing the day after his admission into the hospital, and was able to to open his mouth slightly. We now discontinued the quinine injections, and gave him wine and nutritious food, and quinine by the mouth. Under this plan his power of deglutition was completely restored in two days; but there remained a catarrhal state of the mucous membrane of the trachea and large bronchial tubes, for which he was kept some days longer in the hospital.

Now, that this affection of the pharyngeal membrane was of the erysipelatous kind, I think I was justified in affirming, from the following considerations: 1. From the rapid invasion of the attack, and the great constitutional disturbance with which it was accompanied. 2. From the local redness; and 3. From the great prostration with which the attack was rapidly followed, which was sufficient to kill two out of five cases. Our patient King, as well as all the others whose cases I related to you, seemed to succumb at once under the influence of some powerfully depressing poison, just as patients attacked with external erysipelas do. Then, it is well known, that cases of erysipelas of the head and face often commence with sore throat, or that there is a soreness and redness of the fauces simultaneously with the appearance of the first patch on the face.

The marked difference in the treatment of the successful and of the fatal cases, likewise favours the opinion, that the affection was erysipelatous in its nature. The two fatal cases were treated by a depletory and depressing plan; the three successful ones by a supporting plan, which consisted in, first, the careful avoidance of everything tending to produce fatigue, or exhaustion, or depression; secondly, in the frequent administration of quinine in large doses, in beef-tea in the shape of enemata, and afterwards, when the power of deglutition returned, the exhibition of bark, ammonia, wine, etc., according to the circumstances of the case; thirdly, in the local application of the nitrate of silver to the throat.

The erysipelatous character of the affection is further indicated by its extension to the trachea and bronchial tubes, giving rise to the bronchitis under which the patient subsequently suffered, and from which he is now recovering, having been subjected to a similar course of treatment to that at first adopted.—*Med. Times and Gazette, June* 5, 1852, *p.* 557.

35.—ON THE SEVERER FORMS OF HEARTBURN AND INDIGESTION.

By Dr. Henry Hunt.

[Dr. Hunt dwells particularly upon the connexion of heartburn with the gouty diathesis. This fact was recently established by Dr. Garrod, who pointed out, that immediately before a gouty paroxysm, the blood became loaded with uric acid, which should have been filtered off by the kidneys; and that whatever be the source of the removal of the uric acid from the system, removes all this morbid phenomena altogether. The connexion between this morbid condition of the blood, and constant heartburn, will be made more evident by the following remarks.]

In the first place, it appears that when the kidneys fail to eliminate uric acid, the other secreting organs attempt to relieve the system by a sort of compensating action; the perspiration becomes more than usually acid; this is attested by its odour and its action on litmus paper. The saliva then partakes of the same quality. This is made evident by the constant sour taste in the mouth, which is increased by everything that augments the flow of saliva, as, for example, the introduction of food into the mouth; each morsel in this condition of the blood will immediately appear to turn sour, even before it is swallowed; whereas, there is reason to believe, this sourness is caused by the additional supply of acid saliva. Sometimes also, large quantities of acid matters are carried out of the system by a spontaneous diarrhœa. Now, as all these secretions partake of the abnormal (acid) quality of the blood, may we not presume that all the fluids proper to the stomach, the gastric juice and others, may also participate in it. Indeed, such is proved to be the case, by the fact, that when vomiting is excited under these circumstances, and in this state of the system, the matters ejected are always intensely acid.

If this be admitted, it follows, that the flow of these sour secretions into the stomach being constant, the constancy of the heartburn is at once explained, and the immediate increase of the latter on taking any especially solid, hard, indigestible articles of food, is also explained by the increased supply of abnormally sour gastric juice the secernents are excited to pour out. So immense, indeed, is the quantity of acid matters sometimes suddenly poured into the stomach in such cases, that it would almost appear as if the secernents attempted to relieve themselves, the vessels that supply them, and the whole system, by this vicarious discharge of the gouty virus with which they were loaded.

By the aid of the discovery made by Dr. Garrod of the presence of urate of soda in the blood, we can also explain why some persons only suffer from constant heartburn, or from heartburn uninterruptedly for a few weeks or months, or for some definite period, while others are never perfectly free from it through a long series of years.

The former are those whose kidneys only occasionally fail to excrete uric acid. The latter include those who are the victims of chronic gout with tophaceous deposits, in whose blood uric acid is always more or less present from a permanent cessation of the excreting function from organic disease of the kidney. The intimate connexion between constant heartburn and the urates in the blood is further confirmed by various other circumstances; for example, it is always relieved by the transference to, or concentration of, the gouty matter on some external part, as by an attack of gout in an extremity. It is also diminished by the excretion of uric acid in the urine, whether induced by a natural effort, or under the influence of appropriate remedies. Again, as in this condition of the blood and system a slight bruise or sprain will provoke an attack of gouty inflammation in the injured part, so a slight irregularity of diet will create a fit of indigestion, and induce additional sufferings from heartburn, which, under a more healthy state of the body, it would have been unable to excite.

Thus we see the phenomena of gout afford exceedingly clear evidence of what I wish to prove, viz., that the constant supply of acid, the cause of constant heartburn, is derived from the blood circulating in the vessels of the stomach. Many other diseases will, on consideration, be found to afford equally clear and conclusive evidence of the blood being the source of acid, and consequently of heartburn, on which I need not enlarge, as they will be specially considered hereafter, when the constitutional origin of dyspepsia is examined; but I may here remark, that it does not necessarily follow, that the blood is acid because the secretions possess that quality; the acid may not be free; but present in the form of a salt; or the blood may contain the uncombined elements of the acid; the combination may take place in the mysterious distillery of secretion.

To recapitulate. There may be three forms of heartburn; the first comes on after meals, and is the result of imperfect digestion; the second comes on soon after food is introduced into the stomach, and is the result of contact of acrid as well as acid matters on an inflamed or irritable mucous membrane; the third is the constant heartburn caused by the acid state of the gastric secretions themselves, and this latter variety may be complicated with either or both of the former, in which case, though constant, the sufferings will be aggravated immediately on taking food, if the stomach be inflamed or irritable; and after meals, when that organ is suffering from atonic dyspepsia.—*Med. Times and Gazette, July* 10, 1852, *p.* 28.

36.—*Remedy for Indigestion.* By JOHN SPURGIN, Esq.—[Mr. Spurgin having from numerous trials upon his own case, which was one of most obstinate indigestion, and those of numerous patients and friends, found the following recipe of eminent service in their relief. He was determined, if possible, to give it a public recommendation, hoping that it might prove an instrument in our hands for the expulsion of quackery from some of the domains of our art. He says:]

This latter consideration weighed strongly to induce me to give the article a proper trial; and I allowed the late Mr. South, of Hunter-street, who was a general practitioner, to prepare and sell it, after having satified myself in my own person, and with several of my dyspeptic patients, of its efficacy and undeniable utility. The widow of this gentleman has continued to prepare and to vend it, under the title of the "liquid condiment," for her own benefit, according to this formula:—

℞. Liq. potassæ; sodii. chloridi, aa ℥i.; sodæ phosphatis, ʒiss.; aq. puræ, ℥iii.

As much of the solution may be taken at a time as will not affect the taste of the beverage disagreeably.

In a great many instances the article has proved most useful; many families have it on their tables for daily consumption; and even make their tea by first putting two or three teaspoonfuls into the tea-pot with the tea.

It it not intended to be resorted to as an occasional remedy for various forms of indigestion, but constantly, in like manner as common salt.—*Med. Times and Gazette, July* 17, 1852, *p.* 71.

37.—SPASMODIC ACTION OF THE BOWELS.

By DR. W. S. OKE, Physician to the Royal South Hants Infirmary.

In this case it would appear that there must be an excess of one of the forces of the vermicular action, for if the circular and longitudinal fibres were equally involved, the result would be, increased propulsion, and not obstruction; but on the other hand, when the nice balance between these forces is disturbed, and one of them is in excess, then the vermicular action must be arrested, and obstruction be the result.

Amongst the causes of this kind of obstruction are, saturnine poison, crude indigestible food, such as shell-fish, uncooked food, acrid secretions, &c.

The severity of the spasm will depend, in great measure, upon the degree of disproportion which exists between the two forces of the vermicular action, and the saturnine poison appears to be capable of producing this disproportion in the greatest degree.

The symptoms are, vehement paroxysms of twisting pain about the umbilicus, obstinate constipation, vomiting of a green bilious fluid, and retraction of the abdomen towards the spine. The patient is often found in a bent position, pressing the seat of pain with his hands, to mitigate its severity. The tongue is not much furred, the temperature of the skin normal, and the pulse is generally under 100 in the minute.

Painters are frequently suffering from this kind of obstruction, from their being constantly employed in the use of the carbonate of lead; hence it has been called "colica pictonum".

This disease, so long as it does not exceed the limit of spasmodic action, generally terminates favourably; but if it should have assumed the character of inflammation, then the prognosis will be governed by such an aggravation.

The indications of cure are:—1st, to relax spasm; 2nd, to restore the normal peristaltic action. The first will best be fulfilled by a full bleeding, opium, and the warm bath. The second by purgatives. Fourteen or sixteen ounces of blood should be immediately taken from the system, followed by a pill, containing two grains of opium, and, if the continuance of the spasm render it necessary, one grain is to be repeated every three or four hours. This treatment will usually succeed in subduing the pain and vomiting, and sometimes act as an aperient also; but if it should fail of the latter effect, the pill (1) is to be taken every hour till the bowels are acted upon:—

1.—℞. Hydrargyri chloridi, gr. j.
Extr. coloc. comp., gr. iv.
Olei caryoph. q. s.

Misce fiat pilula omni horâ sumenda donec operaverit.

The warm bath may be used at this period—the temperature 100°, and the patient be immersed twenty minutes, taking care that the temperature be not diminished.

Sometimes the symptoms of saturnine colic are met with in persons not employed in the use of lead. In such a case the gums are to be inspected, and if there be a blue line along their margin, we may be sure that the patient has been in some way or another exposed to the deleterious influence of this poison; and should he have no recollection of being so exposed, then the water he is in the habit of drinking and using for culinary purposes, is to be examined by proper chemical tests; for, however bright and tasteless it may be, if it contain a free acid, and be kept in leaden troughs, or conducted through leaden pipes, it will decompose the lead, hold it in solution, and become a saturnine poison. It is the free carbonic acid (which, in fact, makes the water wholesome, sparkling, and refreshing) that acts upon the lead; and this quality of water is found not only in various districts of Great Britain, but of every other country; and if persons residing in such districts, not having made themselves acquainted with this fact, reserve such water in leaden tanks, or conduct it through leaden pipes, they have to blame only themselves for having converted a wholesome and delightful beverage into one that is deleterious. I have myself seen, in several districts in Hampshire, the deleterious effects of lead held in solution in super-carburetted water, which appeared to be, and of itself was, of the finest quality. A gentleman, resident in one of those districts, was displeased with my opinion, that the water in his well was impregnated with lead, (although it was manifest one of his family had been long suffering from it), because, forsooth, many in his neighbourhood were in the habit of resorting to his far-famed spring, from, as he supposed, its superior purity. A farmer, who lived in the middle of the New Forest, consulted me a few years ago for severe colic and constipation, and as several of his relatives from time to time had been attacked with the same disease, and eventually had fallen victims to it, it was supposed to be hereditary. Suspecting that they had been exposed to the deleterious effects of lead, I tested the pump-water used by his family, and found it holding a large quantity of the carbonate of lead in solution. This at once indicated the cause of the disease, and the means of preventing its recurrence.

Some practitioners have called in question the ordinary tests of lead-water, asserting that neither bichromate of potash nor sulphuretted hydrogen, can be relied upon; but when a patient is suffering from the symptoms of colic, when the margin of his gums show the blue line, and when the water he has been accustomed to drink is shown, by either of the above tests, to contain the solution of lead, there cannot surely be any reasonable doubt as to the cause of the disease, or the efficacy of the test.

The blue line along the margin of the gums was first noticed by Dr. Burton, and a most valuable discovery it is, not only on account of the accuracy of its diagnosis, but because it appears to give early information of the carbonate of lead being absorbed into the system. I could adduce numerous instances in my own practice, to show its diagnostic value, but two brief examples will suffice:—

In the summer of last year I was requested to visit a small tradesman residing in the country, who was suffering severely from intestinal obstruction. As the attack could not be accounted for by any ordinary exciting cause, the gums were inspected, and a well-marked blue line was observed along their margin. As he had not been in any way meddling with paint, the water he was in the habit of drinking was examined by the bichromate of potass-test, and it was found to be largely impregnated with the carbonate of lead. Under a modified degree of the above treatment he recovered, and by avoiding the saturnine causes, the disease will probably never return.

The following case is one of the secondary effects of lead, and I shall mention it in this place, as it showed the blue line in a very remarkable manner:—I was requested to visit a publican and his wife, residing near Otterborne, in Hampshire. The woman had been long confined to her bed, from paralysis of the lower limbs. The husband could manage to walk about the house, as his loss of power was chiefly in the upper extremities. On inspecting his gums there was not only a distinct blue line along their margin, but also a corresponding blue line, as deep as indigo, upon that part of the membrane of the cheek which came in contact with the line upon the gums.

It is almost needless to add, that the water, which they had been accustomed to drink, and which was conveyed through a leaden pipe from a well at some little distance, was found to be saturated with the saturnine salt.

When, from other exciting causes, there is produced a less amount of disproportion in the vermicular forces, although enough to obstruct the bowel, there is a manifest difference in many of the symptoms. Instead of a retraction, there may be a fulness of the abdomen. The pain is more of a persistent, aching character, than returning in vehement paroxysms; and there is less vomiting, indeed sometimes there is none at all.

The curative indication in this case is much the same as in the last,—viz., to subdue the action in excess, and to restore the normal vermicular function of the intestine. If purgatives have failed, they ought not to be persisted in, as they will rather increase the spasmodic action than remove the obstruction. Blood should be taken from the system, and by leeches from the epithelium of the rectum. Opium and calomel are to be given in such doses, and at such intervals, as the degree of pain may require; and this kind of colic will generally be governed by more moderate doses of opium than those prescribed for the "colica pictonum." It will be sufficient to commence with one grain of opium, and three of calomel, and this dose may be repeated in an hour, if it should have given no relief, after which it may suffice to give two grains of calomel, and half a grain of opium, every two or three hours, till the pain has ceased. In this case, also, these means will sometimes act as a purgative.—*Prov. Med. and Surg. Journal, June* 9, 1852, *p.* 294.

38.—ON THE TREATMENT OF DIARRHŒA AND DYSENTERY BY SULPHURIC ACID.

By **Edgar Sheppard**, Esq., Enfield.

[The following cases illustrate the value of sulphuric acid in indiscriminate cases of diarrhœa. Mr. Sheppard says:]

During the last six weeks I have seen upwards of fifty cases of diarrhœa, many of them being severe, some few the very worst, forms of English cholera. In only one instance have I witnessed the failure of the acid treatment, and in that instance the chalk and astringent treatment was unsuccessful also. There was only this difference between the two systems:—the acid plan seemed to have no effect upon the disease, the chalk plan actually aggravated all the symptoms to a very frightful extent.

I propose in this brief paper, first to give my readers some idea of the character of the prevailing epidemic in my locality; secondly, I purpose detailing a few of the worst cases selected from my note-book; and, thirdly, I propose to draw a few practical conclusions from them as to the comparative advantages of the alkaline and acid modes of treatment.

I. The character of the epidemic which has been so prevalent in my neighbourhood, during the last six weeks, has been as follows:—Great prostration of the vital powers; severe griping and pinching pains in the bowels, (not invariable), greatly aggravated by drinking anything hot; greatly relieved by cold; tongue generally dry and furred, occasionally moist and red; distressing flatulence, the bowels being at times very much distended, burning thirst, and sensation of heat down the whole course of the alimentary canal, with (in some cases) incessant vomiting.

II. *Case* 1.—I. T., seized on the morning of August 1st with violent pain in the bowels, with vomiting and purging—a most decided case of what is vulgarly called "*upwards and downwards.*" I was sent for about nine o'clock in the evening. He complained of intense pain, which had been greatly increased by his having swallowed, about half an hour previously, a cup of hot tea, although the stomach only retained it for about five minutes; pulse feeble, 120; tongue red and moist; feet cold; intense thirst and desire for cold water, which his friends would not let him have; had had about fifteen watery rice-coloured evacuations since morning. Nothing would remain on the stomach. I immediately gave him a dose of the following mixture, which I had taken with me in my pocket, upon his wife's description of the case:—℞. Sacchari albi, dr. iv.; acid sulph. dil., dr. ij.; tr. cardamom co., dr. iv.; aqua menth. pip. ad., oz. vi. M. A fourth part to be taken every four hours.—The patient had no sooner swallowed the mixture than it returned. I then ordered some cold fresh water from the pump to be procured, when I allowed him to drink as much as he desired. He immediately swallowed three tumblers full, and expressed the most intense satisfaction. "The burning heat," he said "was quenched." The pain immediately ceased. The sickness did not return. In about ten minutes time I gave him another dose of the mixture, with a pill of calomel and opium, one grain each, and left him with directions to continue the mixture every four hours, and drink as much water as he wished. The following day I found my patient quite well. There had been no recurrence of either the vomiting or purging.

Case 2.—Rev. T. S. is subject every summer, being a nervous weak subject, to attacks of dysentery, which leave him in a state of great prostration. I first saw him August 3rd. The dysentery had been on him for three days, and had not yielded to his usual remedy—the mist. cretæ co., with a little tr. opii. Great pain in the bowels; subject to, and then suffering from, ascarides; tongue dried and furred; constant nausea. Ordered the same mixture as in Case 1, which afforded immediate relief. The next day my patient was convalescent, suffering only from great debility. On the 5th of August he went to Gravesend for change of air; and I gave him an ounce bottle of the dilute sulphuric acid, with directions that he should take twenty-five drops whenever he was threatened with any return of the dysentery. Gave him a turpentine enema the night previously, which destroyed a whole nest of ascarides. On his return from Gravesend, Mr. S. stated that he had had several attacks, but that they had been immediately checked by the exhibition of the drops. He complained of the chalk mixture as having invariably "clogged" the bowels, and produced constipation, whilst the acid stopped the dysentery by increasing the tone of the mucous membrane of the canal.

Case 3.—J. Q., 2 years of age. Summoned to this child early in the morning of August 6. Incessant pain in the bowels, and purging for the last eight hours; skin cold and clammy; pulse extremely feeble, and rapid; intense anxiety of countenance. In fact, the child appeared moribund, and the parents quite thought the case hopeless. They had given a little brandy, which had been immediately rejected by the stomach. I sent for a tumbler of cold water, which the child caught sight of, and requested to have. The little thing drank off the whole, and sunk back on the pillow quite exhausted. Ordered the following mixture:—℞. Acid. sulph. dil., dr. j.; tr. cardamom co., dr. j.; sacchar. alb., dr. ij.; aq. menth. pip., ad., oz. ij. M. A teaspoonful every hour. I called at two o'clock P.M., when the child was sitting up in its mother's arms eating a piece of bread and butter. The purging had quite ceased. Mrs. Q. said "the effect of the first dose was quite magical—the child altered for the better in about ten minutes." On the following day my little patient was running about the room when I called. Being a delicate scrofulous subject, I prescribed eight drops of muriated tincture of iron three times a day.

Case 4.—T. L., aged two years and a half. Symptoms precisely analoous to those detailed in Case 3. Saw this child on Sunday evening, August 29. Ordered mixture as above. All the symptoms immediately relieved.

Case 5.—Mrs. B., a lady from Devonshire, 70 years of age, taken ill August 26. I saw her on the morning of that day. Great uneasiness in the bowels, hardly amounting to serious pain; constant vomiting and purging; tongue dry and furred; fœtid breath; pulse 100; abdomen tympanitic; great thirst. Ordered iced water *ad libitum*, and the following mixture and pill:—℞. Sacchari albi., dr. iv.; acid. sulph. dil., dr. iss: tr. cardamom co., dr. iij.; liq. morph. bimeconat., m. xl.; mist. camphoræ, oz. vss. M. A fourth part every four hours.—℞. Hydr. cum cretâ, gr. iij.; pulv. ipecac. co., gr. ij. To be taken as a pill immediately. On the following day I found that my patient had obtained relief in the course of two hours. Only one evacuation since my visit yesterday; pulse 88; tongue moist and not so much furred; abdomen less tympanitic; had passed a comfortable night. She said she believed the iced water had "done wonders for her." Rapid improvement took place, and she left here for home August 31st.

Case 6.—Mr. J., seized with violent vomiting and purging August 29. Intense thirst and burning heat down the alimentary canal. Had been persuaded to drink hot things, which had greatly aggravated the symptoms. Flatulence and severe abdominal pain. Ordered cold spring water *ad libitum*, which checked the vomiting, followed by thirty drops of the acid, with tr. cardam. co. every four hours. Immediate relief.

III. The above cases have been selected from my note-book to illustrate the *rapidity* of the cure in the treatment by the sulphuric acid, as compared with that by chalk and opium. In every case that I have seen, with one exception, the amelioration in all the symptoms has been equally rapid. This exception occurred in one of my own servants, a delicate young woman, 25 years of age. The acid treatment did not seem to do her much, if any, good, when I immediately resorted to the following mixture, (my olden form for the treatment of diarrhœa):—℞.

Cretæ pp. dr. ij.; conf. aromat., scr. ij.; sp. ammon. aromat., dr. ij.; tr. opii. dr. j.; tr. catechu, dr. iv.; aq. menth. pip., oz. v. M. A fourth part every four hours.

The first dose so aggravated her symptoms that I could not persuade her to take a second. I then returned to the acid treatment, in which she persevered for two days, being occasionally better, and then again as bad as ever The symptoms at length yielded to the following combination:—℞. Potass. chlorat., sodæ sesquicarb., utrq., dr. j.; tr. cinchonæ co., dr. iv.; sp. æth. sulph. co., dr. j.; infus. cascarillæ, oz. v. M. A fourth part every four hours. A glass of port wine twice a day.

In about ten cases out of the fifty entered in my note-book, I first tried the chalk and opium treatment, before resorting to the acid; *in only one* was perfect relief afforded. The vomiting has been so severe in the prevailing epidemic, that it would seem as if the stomach was unable to bear so nauseous a mixture as that of chalk and opium. And in most of the cases I have found the best, indeed the only efficacious plan to be, to relieve the intense gastric irritation by cold water, before resorting to the medical treatment. In some cases, if the stomach will bear it, the chalk seems to stop the diarrhœa, but to increase the nausea, and to produce most uncomfortable sensations in the bowels on the day after its exhibition. This I have invariably observed in the olden plan of treatment.

The conclusions to be drawn from my experience of the sulphuric acid in the treatment of diarrhœa and dysentery, are as follows:—

1st. It is *more efficacious* than alkalies, opiates, and astringents, in a proportion greatly exceeding ten to one.

It is *more rapid* in its action, (especially in children), in a proportion greatly exceeding twenty to one.

3rd. It seems to act in a more rational and (if I may so express myself), scientific manner, by increasing the *tone* of the mucous membrane of the alimentary canal, rather than by simply astringing its pores.

4th. The worse the case, the more rapid and marvellous seems to be the cure,—a most striking feature as compared with the treatment by chalk and opium.

I would urge, in conclusion, upon my medical brethren, the desirableness of giving this system a fair trial; and I would, moreover, advise them, instead of giving the acid alone, with water, to combine it with a little sugar and (most rare and excellent of all tinctures), compound tincture of cardamoms, which seem greatly to relieve the so-frequent distressing flatulence. Unless the character of this autumnal epidemic should greatly alter, they will arrive at the conclusion, after having tested fairly the acid plan of treatment, that it does not admit of comparison, but only of *contrast,* with the olden system.—*Provincial Med. and Surgical Journal, Sept.* 15, 1852, *p.* 471.

39.—*Cases of Diarrhœa treated by Sulphuric Acid* By JOHN HILL, Esq., South Cave.—[The following cases are mentioned by Mr. Hill as examples of this mode of treatment:]

June 19.—J. D., aged 40, agricultural labourer, was attacked with vomiting, purging, cramps, cold extremities, and great prostration.

℞. Acid. sulph. dil. ʒ iii.; misturæ camphoræ ℥ viiss. Ft. mist. cap. ℥ i. quartis horis. After the third dose all the symptoms were removed.

20th—Quite well.

Aug. 2.—J. H., aged 45, agricultural labourer, was attacked with vomiting, purging, (rice-coloured evacuations), violent cramps, and cold extremities, with hollowness of voice, &c.

℞. Acid. sulph. dil. ♏ xxv.; mist. camph. ℥ iss. Ft. haust. tert. qq. hor. s.

Six hours afterwards no return of sickness. Only twice purged, cramps gone, and after the fourth dose all the unfavourable symptoms removed.

3rd.—Quite well.

Aug. 2.—Mrs. H., aged 78, was attacked on the 30th of July with purging and sickness; tongue coated, pulse feeble, extremities cold; in a state of collapse.

℞. Hydr. chlorid. gr. iv.; pulv. opii gr. iss. Conf. q. s.; ft. pil. stat. sum.

℞. Mist. cretæ ℥ vij.; tinct catechu ℥ i.; tinct. opii ʒ iss. M. ft. mist., s. coch. i.; post sing. sed. liq. Catapl. sinapis scrob. cord.

3rd.—The symptoms as urgent as yesterday; vomiting more troublesome; continued purging; cold extremities.

℞. Acid. sulph. dil. ʒ iii.; mist. camphoræ ℥ viij. M. ft. m. s. ℥ j. tertiâ qq. horâ.

4th.—Only twice purged; stomach still irritable; but the vomiting less frequent; the circulation improved; drowsiness.

℞. Mist. acid.; catapl. sinapis nuchæ.

5th.—Passed a good night; no action of the bowels; vomited twice; pulse improved.

℞. Acid. hydrocyan. gt. j.; tinct. card. co. ʒ ss.; infus. cascarillæ ℥ iss. Ft. haust. qq. horâ. Habt. ol. ricini ʒ iij. stat.

6th.—In every respect better. As might be expected, her recovery was slow, in consequence of her advanced age.

8th.—Well, but very weak.

August 5.—R. E., aged 60, was attacked yesterday with the following symptoms:—Purging (rice-coloured), vomiting, cramps, great prostration, anxious countenance, voice hollow, and suppression of urine, &c.

℞. Acid. sulph. dil. ʒ iij.; mist. camph. ℥ viijss. Ft. m. s. ℥ j. tert. qq. hor.

No sickness after the second dose; only twice purged; cramps continue.

Evening.—Surface warm: no return either of sickness or purging; better in every respect.

6th.—Quite well, but very weak.

August 6.—W. M., aged 65, has had sickness, purging, and cramps, the whole of last night; great prostration; urine scanty; tongue glazed, &c.

℞. Acid. sulph. dil. ʒ iij.; mist. camphoræ ℥ viii. Ft. m., capt. ℥ j. tert. qq. hor.

7th.—The symptoms entirely removed after the third dose; well.—*Med. Times and Gazette, Aug.* 21, 1852, *p.* 197.

40.—*On Matico in Diarrhœa.*—M. Modonini states that he has employed this substance in about 120 cases, and usually with good and speedy effect, in various species of intestinal discharges, and especially in atonic diarrhœa. It is given at the Bologna Hospital in doses of from 18 grs. to ʒj. per diem, no inconvenience save a little nausea or diarrhœa ever being caused, and this being capable of removal, either by diminishing the dose, or temporarily suspending the remedy. In the most favourable cases, an impression is made upon the disease by three or four doses; and it is quite relieved in from three to six days. The medicine should, however, be continued awhile longer, in order to prevent relapse. In those diarrhœas in which, owing to the existence of visceral changes, or the presence of a general dyscrasis, the return of the diarrhœa is inevitable, the matico is still an invaluable remedy, owing to the rapidity of its astringent action, which enables us to suspend the exhausting discharges, and obtain time for the employment of any other means which the nature of the case may indicate.—*Bulletino delle Scienze Med.*, vol. xx., p. 63.—*Medico-Chir. Review, July*, 1852, *p.* 275.

41.—*Sarcina Ventriculi.*—By Thos. Edward Amyot, Esq., Diss, Norfolk.—[In a letter to the editor of the 'Medical Times and Gazette,' Mr. Amyot records the following case, which for eight years baffled every attempt at effectual relief. The patient was a female aged 70, mother of six children, short, active, and when free from the attacks of her disease, inclined to be florid and healthy in her appearance.]

Eight years since, at Christmas time, she was attacked with inflammation of the stomach and œsophagus, of which she was relieved by my much respected neighbour, Mr. Mayhew, of Stradbroke. Six months after this I first attended her, and found her suffering from very frequent and most violent acid vomiting, which was difficult to account for, as the pulse and tongue were unaffected, and little or no tenderness was complained of at the epigastrium; there was, however, much flatulence and distension. Alkalies, hydrocyanic acid, and creosote, were tried with perseverance, but gave little or but very temporary relief. The nitrate of silver and opium were, I think, more successful, and their use was continued for some time; but they were at last abandoned as insufficient, and in the fear of staining the skin. I next tried a strong infusion of calumba, about double the strength ordered in the P. L., with a more satisfactory result; but I was obliged to give it in a still more undiluted form, and for the last three or four years she has taken from ℥ss. to ℥j. of the concentrated essence of calumba, (I have principally used that prepared by Messrs. Gale, Baker, and Co.,) with ℥ss. of the tincture to the eight-ounce bottle, every two or three hours during the attack. This, as a means of relief, has proved most perfectly successful; and the intervals of health, during which she is active and bustling, and eats, drinks, and sleeps well, have been lately of great length. Twice, for instance, a clear twelvemonth has elapsed without any return of symptoms.

On reading the notice of sarcina in Professor Quekett's admirable Lectures on Histology, vide 'Med. Times, 1851, p. 366,' I became very strongly impressed with the idea that I had at last got a clue to the nature of my patient's disease, and I immediately ordered that a portion of the vomited matter should be saved for inspection at the earliest opportunity. That opportunity has only just occurred, and the result is the following:—I received the fluid a few hours after it was thrown up; it had much the appearance of thin mucilage, with a dense, dirty white, compact sediment. In odour it was faint, and somewhat resembled stale urine. It produced intense reddening of the litmus-paper, and powerfully effervesced with the carbonates. A small portion taken from the sediment with a pipette, and magnified about 300 diameters, showed a great abundance of the characteristic crucial forms of the sarcina combined with much mucus, epithelial *débris*, and fragments of muscular fibre, both simply and transversely striated.

Since making the examination, I have again seen my patient, and questioned her closely as to the nature of her attacks. She at first feels a "boiling up" (I use her own words) in the stomach and throat, and soon after a quantity of tasteless water rises into her mouth; this is immediately followed by sudden and violent acid vomiting, which formerly lasted, at short intervals, for days, and during the attacks she could take no food, and was much debilitated; but now, if she has the calumba at hand, she can always master it (to use once more her own expression).—*Med. Times and Gazette, Aug.* 14, 1852, *p*, 173.

42.—*Bothriocephalus Latus, occurring in an English Child cured by the Oil of Male Fern.* By DR. WM. WITHEY GULL.—[The child was admitted into the children's ward on the 20th February, 1852. The following is the report of Mr. Chaplin, the clinical clerk:]

She lives at Woolwich, and the mother gives the following account of her:—At the age of eighteen months, having then been weaned more than half a year, she became very ill, with feverish symptoms and cough. Her ailment was so severe that it was thought she would die; but after having passed a quantity of tape-worm, rolled up into a mass of the size of the bowl of a tobacco-pipe, she began to recover. Since that time she has had several similar attacks, becoming feverish and fretful, with loss of appetite, &c., and soon after passed a portion of the worm, upon which the symptoms have subsided. These attacks came on, at first, at intervals of some months; but lately they have been more frequent. She passed the last portion about a week ago, having previously suffered in the usual way, described above. The several pieces of worm which the mother had collected, and brought with her, measured thirteen feet. The parents of the child are English, and neither of them has ever been abroad, the limit of their farthest excursion from home being Gravesend. The mother was born at Poplar, the father at Woolwich, where he works as a smith. His occupations have sometimes taken him on board foreign vessels. They have no foreign friends, nor friends residing on the continent, from whom they could have received any presents. The child was born at Limehouse, and lived there with its parents for some time, and during that period the family probably used the water of the New River Company. Whilst living at Woolwich, they have obtained it from the Kent water-works. On admission, the child was pale; rather dull and feverish; bowels confined; pulse natural; tongue clean and pale; abdomen large and hard. Ordered ten grains of jalap-and-mercury powder to be taken at bed-time.

23rd.—The bowels have not yet been acted upon. Repeat powder.

25th.—Powder produced a copious evacuation, but no portion of worm expelled. Ordered the following mixture:—Magnesia and sulphate of magnesia, a dessert spoonful three times a day.

28.—The bowels have continued to act freely, but no portion of worm has passed. Ordered the following draught:—Oil of male fern, one drachm and a half, acacia mixture, two drachms, distilled water, one ounce and a half; to be taken early the following morning.

29th.—The draught was administered at seven o'clock this morning, and produced slight sickness, but only a small part was returned. At one o'clock the bowels acted forcibly, accompanied with a good deal of straining. The worm measured seventeen feet, and including the head, was expelled entire. The child suffered no inconvenience from the medicine in any way, and the following morning seemed well.

The interest attaching itself to this case is peculiar, from the species of worm, the early age of its locating itself in the child, and the satisfactory effects of the oil of male fern.

In our present state of knowledge respecting intestinal worms, every fact connected with their history deserves to be recorded. The occurrence of the bothriocephalus latus in persons who have not lived out of England is rare. Professor Owen states, that in looking over the collection made by a celebrated worm-doctor in Long-acre, he found three specimens of this worm; two of these had come from persons who had been in Switzerland, of the third no authentic account could be given. In a conversation with him on the case here recorded, he remarked that a sea-port was just the locality in which we might expect to meet with anomalies in geographical distribution of intestinal worms, since their ova might be deposited in various ways in such localities, by persons who traded thither, and that it was surprising their occurrence was so rare. To which I may add, that when we consider the fertility of these creatures, and the possibility of Russian sailors being infested with them, we may indeed wonder that they have not been imported amongst us; and the fact that they have not been prevalent, suggests that they are more dependent upon *external conditions of soil and the like,* than upon the human body itself—for we can hardly suppose that the intestinal secretions of a Russian or a Swiss are more favourable to the existence of a bothriocephalus latus, than are those of an Englishman.

The circumstances under which these creatures exist out of the body are yet unknown, but their restriction to certain localities, and the changes of form which some of this class undergo, render it probable that we may yet recognise them under some other form in the water of the places where they occur. With such views, we can well understand why the tape-worm of one locality should not prevail in another, and also why, where a solitary exception is found, it should be in a place having communication with foreign countries.

The extreme fertility of the bothriocephalus will be understood, by considering that each foot of the well-developed worm contains 150 segment or joints, that each joint possesses its own ovary and male organs. Hence, each joint is fertile; and as each ovary would produce 8000 ova, according to as careful a calculation as possible, ten feet of such a worm would produce 12,000,000 of ova.

I have taken every means of examining the head of this specimen, but can find no trace of a terminal pore, by which it could imbibe nourishment, nor any signs of vessels by which the intestinal fluids, if so taken up, could be distributed. It seems probable that these animals nourish themselves as the algæ do, *by absorbing the fluids in which they are immersed by the whole surface of their bodies*; a view which I think I am at liberty to say is thought by Professor Owen to be not improbable.—*Lancet, Aug.* 14, 1852, *p.* 148.

43.—*On Anthelmintics.* By DR. MEREI.—As to anthelmintics, children of tender age do not suffer from the tape-worm, which in all my practice I scarcely have encountered before the eighth year, even this being a rare case. I have not to speak, therefore, of the male-fern, or of the pomegranate root, but to mention only those remedies which have appeared to me the best against the *ascaris vermicularis*, and *ascaris lumbricoides*.

The *ascaris vermicularis* (maw-worm) dwells in the rectum and the lower part of the large intestines, crowded in great numbers, most frequently proper to infancy and tender childhood. The remedies employed to remove them are almost in all countries the same. I will mention, however, injections of an infusion of red onion, mixed with some drops, or half a grain, of extract of aloes.

Ascaris lumbricoides is the worm that causes frequent and sometimes severe disturbances from the second year of age, its abode being the small intestine, and sometimes the stomach. I can recommend the following powder, which I have found most efficient in the complaint in question:—

℞. Pulv. sem. santonici,
Pulv. sem. tanaceti utrq., dr. ss.
Pulv. rhei, gr. xij.
Pulv. jalapæ, gr. viij.
Sacch. alb., scr. iv.

F. pulv., to be divided into six or twelve powders, according to the age of the child. From two to three powders every day.

If we are not mistaken in the diagnosis, after a course of four or five days with these powders the worms will come out; if we have been mistaken, which easily happens with this complaint, the above powders, united with a strong reduction of farinaceous food, at least will have exerted good effects upon that condition of the abdomen which resembled helminthiasis.

Mercury is less efficient as an anthelmintic than the above remedy, and should never be given repeatedly, unless there is clear and special reason for its use. If the constitution of the child, however, is strong, and you wish to increase the force of the medicine by the addition of calomel, then I advise you to do this only after you have given, during three or four days, the former powders, and to accomplish then the trial or cure by adding to the three or four last doses two or three grains of calomel to each.—*Provincial Journal, and Dublin Medical Press, July* 14, 1852, *p.* 23.

44.—ON THE STRUCTURE, FUNCTION, AND DISEASES OF THE LIVER; AND ON THE ACTION OF CHOLAGOGUE MEDICINES.

By Dr. C. Handfield Jones, F.R.S., &c.

[The following condensed account of Dr. Handfield Jones' investigations, at a meeting of the Royal Medical and Chirurgical Society, was communicated by Dr. Bence Jones.]

The author first described the minute structure of the liver, which consisted essentially of a mass of nucleated cells or celloid particles, usually more perfectly formed than the cells either of the salivary or renal glands, presenting a distinct nucleus, with a nucleolar spot, an exterior envelope, and an included mass of soft, semi-solid, albuminous substance, which commonly contained a few oily molecules. In addition to these, in well-nourished livers, were numerous free nuclei, imbedded in albuminous blastema, which exhibited various stages of progress towards the mature or perfect cell. The oily contents of the cells were subject to great variation, both in the same individual and in different classes of animals;—the less perfect the type of the respiratory process, the greater the quantity of oily matter in the hepatic cells. The cells in their general mass constituted the hepatic parenchyma; this might be subdivided into smaller portions, called lobules, which were separated from each other more or less completely by fissures, the fissures themselves being continuous with canals that ramified throughout the parenchyma, and which, from containing the portal vein and its associated vessels, had been termed portal canals. In reference to the mode of distribution of the vessels, originally so well expounded by Mr. Kiernan, the author remarked that he decidedly agreed with Theile, who denied the existence of the vaginal branches and plexus of the portal vein mentioned by Mr. Kiernan. The author quoted from a paper by Mr. Paget, who had described these vaginal plexuses to be derived, not from the portal veins, but from the hepatic arteries, from which they were completely filled, when both arteries and veins were at the same time injected. The interlobular portal veins were therefore derived directly from the portal veins; and those which appeared to be vaginal branches of the portal vein were its internal roots, by which it received the blood which had served for the nutrition of the hepatic ducts and other vessels of the liver. After alluding to the mode of ramification of the hepatic artery, and the divisions of the hepatic ducts following the branches of the portal canal the author referred to the relation which existed between the ultimate ducts and the cells constituting the parenchyma of the lobules. The prevalent opinion had been, that these cells were exactly homologous to the cells of the renal tubuli or salivary vesicles, like them growing on a free surface open to the exterior. Hence some anatomists had believed they had detected a basement membrane, forming anastomosing tubes, constituting a true lobular biliary plexus. Others, unable to find a basement membrane, had described the ducts as continued into the parenchyma of the lobules, as channels without proper walls, mere intercellular passages. After referring to the researches and opinions of Weber, Müller, Professor Retzius, on the one side, and of Val Guillon, Gerlach, and Dr. Carpenter, on the other, the author stated that the views of Kölliker, who denied the existence of intercellular passages in the lobule, agreed very nearly with his, (the author's), and conceded his main position, that the cavity of the ducts was quite shut off from the cells of the lobules or their interspaces. The structure of the ultimate ducts, which the author had first discovered, was peculiar, and seemed to indicate strongly that they exerted active functions, and that they were something more than mere afferent canals. The injection of the duct, in the livers of pigs, by the double method, using separately saturated watery solutions of bichromate of potass and acetate of lead, exhibited an abundant yellow precipitate in the fissures; but in very few parts did it penetrate the lobules, which must have happened if there existed a lobular biliary plexus, or a plexus of intercellular passages. The author conceived, therefore, that the hepatic ducts did something more than merely carry out already elaborated bile. The ultimate ducts were far too small, and too sparingly distributed, to be able to take up the bile from so vast a mass of cells as that which constituted the parenchyma. If the ducts did not extend beyond the margins of the lobules, of which the author had no doubt, then the bile must be transmitted from cell to cell; or there was a march of cells outwards from the centre to the circumference; or else the bile, arriving at the margin of the lobules, was taken up by the ultimate ducts in some unknown way. The author thought such assumptions groundless and unnecessary; and that the pathological state of fatty liver, as well as the fatty liver occurring naturally in fishes, showed that the secretion of the parenchyma was not identical with that of the ducts, for the gall-bladder could hardly contain deep-green bile, when the parenchyma was nought but a mass of oil. He concluded, then, that the parenchymal cells of the lobules did not merely secrete bile which was carried off unaltered by the ducts, but that the cells secreted biliary material, or some of its components, which were not fully elaborated or formed into perfect bile, except by the action of the ultimate ducts. Proof was then offered that the hepatic cells did not ordinarily contain bile, although it was commonly held they did. He believed that to be a diseased or exceptional condition, not found in the hepatic cells of slaughtered or healthy animals. Furthermore, a yellow tint in the cells was no proof of the presence of bile; it showed merely the presence of pigment, and yellow pigment is found in the fat of some animals, quite independent of biliary secretion. Chemistry must be resorted to, to solve the question of the presence of bile in the hepatic cells. The author had made alcoholic extracts of the livers of different animals, and having evaporated to dryness, the residue, when dissolved in water, failed to show, by Pettenköffer's test, any reaction characteristic of the presence of the bile. The author, however, did not wish to express a positive opinion, but he thought that the received opinion had need of more direct evidence, before it could be regarded as proved. He then detailed the mode in which the morphological structure of the ultimate biliary duct fulfilled the function of secretion. The chemical changes which the ultimate ducts effected, might be conceived according to the hypothesis of Lehmann; and a summary of our present knowledge might stand as follows:—Sugar, oil, and a yellow pigment were found in the parenchyma of the liver; bile is not found there, but in the ducts; it is inferred, then, that the ducts, through their ultimate extreme portions, *make* the bile. The author next proceeded to detail some experiments made relative to the action of cholagogue medicines, the results of which led him to believe that mercury, muriate of manganese, and colchicum, were the only ones which seemed to increase the production of yellow pigmentary matter in the cells of the liver. They also increased the production of glycocholite and taura-cholite of soda; but it had to be determined whether the quantity of these principles was always proportionate to the yellow pigment. It was clear that the cholagogue action of a medicine, its emulging effects on the ducts, was distinct from that which it excited in the production of biliary pigment. One very important effect of the administration of mercury on the liver, was noticed to be congestion of this organ; an argument rather forbidding the use of the remedy in inflammation of the substance of the liver, a plan otherwise recommended by analogical experience. The author then passed to the subject of diseases of the liver; the microscopic appearances of fatty liver were detailed, and the question, what constituted true fatty degeneration of the liver, discussed. Was it a simple increase in the quantity of oil naturally existing in the hepatic cells, or was it a further and more important change? He believed the latter. In the liver of animals artificially fed on oily food, and subsequently examined, the cells, as well as the intercellular substance, were loaded with oil-molecules: the accumulation of oil was equal everywhere. But in the morbid state of fatty degeneration, the oil-drops where not enclosed in distinct cells, but appeared to lie in an indistinct and granular, or semi-fibrinous substratum. Another point of difference consisted in the absence of sugar in true fatty degeneration; while in the liver of an animal fed on oily food to produce a fatty liver, sugar could be detected. Another point of importance was the limitation of fatty degeneration to the margin of the lobules; it was not a mere accumulation of oil in the marginal cells, but a destruction of those cells: a liver thus affected presented the lobules marked out by a zone of opaque matter. No satisfactory explanation of this tendency of oil to accumulate in the marginal cells could be offered. Fatty degeneration of the liver might occur in very different diseases; it was by no means peculiar to phthisis. Reference was then made to the waxy liver of Rokitansky, with which the author was not sure that he was acquainted. Cirrhosis was then mentioned, and Rokitansky's description quoted, as also that of Dr. Budd, whose views expressed the opinion ordinarily received, but from which the author in some degree dissented. The author believed that an unhealthy nutritive process was the essence of cirrhosis, and might be developed in one of three situations. 1. In the larger and moderate-sized portal canals, excluding only the smallest. 2. In these last and in the fissures. 3. In the smaller canals and fissures, and in the substance of the lobules. The first form produced common *hobnail* liver; the second and third, the tough, firm, dense liver, sometimes termed brawny. The author considered cirrhosis to represent essentially a degenerative process, and to arise from the effusion of an unhealthy plasma, not only in the canals and fissures, where it induced unnatural increase, but also in the external part of the lobules, where it passed into a solid form, and constituted an amorpho-granular substance, compressing the capillaries and obstructing the secreting cells. The thickening and condensation of the fibrous tissue in the liver were thus not so much the effect of an inflammatory action, as of a low degenerative process, analogous to that which stiffened the valves of the heart and contracted the orifices; and which view the author thought was supported by the results exhibited in a table appended to the paper. The subject of jaundice next received attention. This was a disease that manifestly resulted from the conveyance into the blood of bile pigment, a constituent of the bile which was essentially excrementitious, and intended to be cast out with the fæcal matter. In many cases it existed only as retained excretion; in others it seemed to be formed in excessive quantity, as in the acute yellow atrophy of the liver. Yellow matter was often found in the central cells of the lobules, and, nevertheless, there was no jaundice. It should be borne in mind, that the yellow pigment, as it existed in the cells, did not evidence the presence of biliary matter, of cholic acid, or its conjugates. The yellow matter could be extracted by alcohol, and its characteristic reaction obtained by nitric acid, but Pettenköffer's test decided against the presence of any organic biliary acid. The deep colour of the urine in jaundice depended on the presence of bile pigment solely; no trace of cholic acid was discoverable. The author considered the majority of cases of jaundice to depend on the absorption into the blood, not of completely formed bile, but of one of its constituents only, the yellow pigment; and this might take place in one of three ways: 1, by a mechanical obstruction to the flow of bile into the intestine, through the ductus communis choledochus; 2, from inaction of the elaborating ducts; 3, with or without impairment of the action of the excretory ducts, when an increased quantity of yellow pigment was formed in the parenchyma of the liver.—*Lancet, June 26, 1852, p.* 614.

45.—*Fatty Enlargement of the Liver.* By Prof. Bennett.—Fatty liver is now well known to depend on the secretion of a large quantity of oil, which is stored up in the hepatic cells. These cells are under such circumstances frequently enlarged, and contain oil varying in amount from a few granules to a large mass, which occupies the whole of their cavities. Not unfrequently livers, which to the naked eye appear healthy enough, may still be demonstrated with the microscope to contain an unusual number of fat granules, and there can be little doubt that considerable variations may exist in this respect quite compatible with a state of health. Almost all stall-fed animals that do not labour, possess a large amount of fat in their hepatic cells. It is only where the organ is much enlarged, altered in colour, and presses upon neighbouring viscera, that its fatty degeneration can be said to interfere with the vital processes.

In man, fatty degeneration of the liver has been observed to be very common in two kinds of cases—1st, in drunkards; 2d, in persons labouring under phthisis pulmonalis. Drunkards are continually taking alcholic liquids, which abound in carbon, and which being too large in amount to be excreted from the lungs as carbonic acid, and from the liver as bile, is stored up in the latter organ in the form of fat. In phthisis pulmonalis, the excretory power of the lungs is diminished, and the excess of carbon in the tissues and food is thrown upon the liver to be excreted. Under these circumstances, it is converted into fat and stored up in that organ.

The manner in which the livers of geese are prepared in Strasburg, is by following a process somewhat similar. They are confined in close cages, in a heated atmosphere, and largely supplied with food. Want of exercise and heat diminish the respiratory functions, and cause that of the liver to be disordered, and the result is enlargement of the organ from accumulation of fat. In the case before us, such exactly seems to be the cause of the disease. A man is kept stationary watching a steam-engine, in an elevated temperature, whilst he is consuming his usual food, and exceeding in alcoholic drinks.

This view, however, has been objected to on the following grounds:—1st, That the connection between fatty liver and disease of the lungs is not general; 2d, That there is no evidence that a fatty liver does not excrete bile as usual; and 3d, That as a considerable portion of bile is absorbed into the blood to be excreted from the lungs, the liver must be considered as preparing material for these organs. Hence it is argued that it would be a strange compensation if the functions of the liver were to be increased, while that of the lung is diminished by disease (Budd). But if fatty liver be not always conjoined with diseased lung, it will be found associated with some circumstance which diminishes the function of that organ, in relation to the work it is called upon to perform; for instance, the separation of carbon from the alcoholic fluids taken by the drunkard. Again, want of exercise from various diseases, and especially phthisis, whilst, in order to support the strength, wine and nutritious diet are given liberally, may frequently be seen to be the cause of fatty liver. Further, although it be granted that the liver may in health prepare carbonaceous matters for pulmonary excretion, it must be clear that if the lungs cannot accomplish this function, such matters must be thrown back or retained in the liver, and constitute a powerful cause of fatty degeneration of that organ. On the whole, therefore, we must regard excess of carbonaceous matters in the system, and the diminution of pulmonary action, as the chief causes of derangement in the functions of the liver; a view which has the merit of pointing out to us as remedies a diminished diet, a temperate climate, appropriate exercise, and an endeavour to promote the functions of the lungs and of the skin.

There is another structural alteration of the liver, which, from the colour and general appearance so like bees' wax it assumes, has been called "waxy" and sometimes "brawny" liver. This disease has been confounded with fatty liver, although an examination of its minute structure will show that the hepatic cells present a very different character. Instead of being enlarged and filled more or less with oil globules, they are colourless, shrunken, and for the most part destitute of contents, while the nucleus has disappeared. The lesion seems to me to be a further stage of the fatty degeneration, in which the oily matter is absorbed, and the cell-walls are left behind and aggregated together; but further researches are required to determine this point.—*Monthly Journal of Med. Science, August,* 1852, *p*, 164.

46.—*On Cirrhosis of the Liver.* By PROFESSOR BENNETT.—This morbid change in the liver consists of hypertrophy of the fibrous element between the lobules of the organ and its subsequent contraction, whereby its volume is diminished, and the secreting cells compressed and atrophied. As a further result, the large venous trunks are also compressed, and their commencing ramifications so congested that effusion into, or dropsy of, the peritoneal cavity is induced. The nutmeg liver is an incipient condition of cirrhosis, in which the portal system of vessels in the organ is congested. In both conditions, the hepatic cells are more or less fatty and atrophied. The fatty degeneration in nutmeg liver may be seen to commence at the circumference of the lobules, whereas in the advanced stage of cirrhosis, all the cells are more or less diseased, some loaded with fat, and others with yellow pigment. Notwithstanding the great organic changes which are frequently observed in this disease, danger is not so much to be apprehended from interruption in the functions of the liver, as from the ascites induced by the constriction of the large abdominal veins, which, by distending the abdomen and compressing the lungs and liver, so interferes with those important organs, that death is occasioned.

The treatment in cirrhosis must be purely palliative, and directed to diminishing the ascites, by means of diuretics and diaphoretics. The question of drawing off the fluid by paracentesis is one which may arise, in case the swelling is very great, and the embarrassment to the pulmonary and renal organs extreme. Even then, although temporary relief may be obtained by the operation, there is every reason to believe that, in the majority of cases, life is in no way prolonged.—*Monthly Journal of Med. Science, Aug.,* 1852, *p.* 166.

47.—*On Congestion of the Liver.* By DR. GEORGE BUDD, F.R.S. —[From the researches of Berzelius it would appear that the colouring matter of the bile is analogous to the chlorophyl of plants, and Dr. Budd is inclined to believe that the different shades of colour of the urine are owing to the further oxidation of the same principle. Dr.

Budd believes that the colouring matter of the bile exists ready formed in the blood, and is merely separated from it by the liver. He thinks it probable that the biliary acids "are formed in the liver by the agency of the secreting cells." Bile must be an essential agent in digestion, because a gradual impairment in the digestive process takes place when the common gall-duct is permanently closed. The bitter principle of the bile would seem to prevent the fermentation of the chyme, and the nitrogenized portions of the food from undergoing putrefaction. In speaking of congestion of the liver, Dr. Budd says:]

Congestion of the liver may arise from changes in its tissues, calling for an increased supply of blood, and also from an alteration in the blood itself.

All the matters absorbed by the bloodvessels in the intestinal canal have to pass through it. Its lobular substance is the first filter, if we may so term it, through which the impure liquid must strain. All the alcoholic drinks, all the noxious ingredients that may chance to be present in our food, and such hurtful products of faulty digestion as are readily soluble, are immediately—before they have been diffused throughout the whole mass of the blood, and before they have been submitted to the influence of oxygen—carried to the liver. Amid the continual excesses at table of persons in the middle and upper classes of society, an immense variety of noxious matters find their way into the portal blood that should never be present in it; and the mischief which this is calculated to produce is enhanced by indolent or sedentary habits. The consequence often is, that the liver becomes habitually gorged. The same, or even worse effects, result in the lower classes of our larger towns, from their inordinate consumption of gin and porter.—*Medico-Chirurgical Review, Oct.,* 1852, *p.* 499.

48.—*Treatment of Jaundice.*—[DR. BUDD recommends the following treatment in cases of jaundice arising from suppressed secretion.]

From ʒss. to ʒj. of sulphate of magnesia, in conjunction with gr. xv. of carb. of magnesia, and ʒss. of aromatic spirits of ammonia three times a day,—the sulphate of magnesia to keep up free action of the bowels; the carbonate of magnesia to neutralize any excess of acid in the stomach or bowels; and the aromatic spirit of ammonia to support the nervous system, and to keep up the action of the skin.—*Medico-Chirurgical Review, Oct.,* 1852, *p.* 503.

49.—PRACTICAL REMARKS ON THE "STOMATITIS ULCEROSA" OF CHILDREN, WITH CASES.

By DR. T. W. MACKENZIE, Physician to the Paddington Free Dispensary for the Diseases of Women and Children, &c.

[These ulcerative affections in the mouths of infants and young children are often exceedingly troublesome. They may not depend upon any specific cause, but chiefly on debility, with possibly some trivial local affection superadded. Dr. Mackenzie has employed the following simple method of treating the disease with much success.]

The term "stomatitis ulcerosa" sufficiently and accurately expresses the nature of this affection; but in its mode of origin, situation, and extent, it presents many varieties. Thus, in one form, it commences as a small inflammatory spot, either on the frenum of the tongue, the outer surface of the gums, or the mucous membrane of the cheek or lip; but, wherever it commences, ulceration speedily supervenes, attended with febrile disturbance, a coated tongue, profuse salivation, and a disordered state of the stomach and digestive organs. In another form, it is found to be connected with the passage of some of the larger teeth through the gum, more especially when several are about to make their appearance together. In this case, the gum becomes swollen, painful, and dark-coloured; and, after a few days, the portion over the protruding teeth gives way by ulceration, which, in some cases, extends considerably, attended with tumefaction of the mouth and cheeks, increased salivary discharge, and febrile disturbance. More frequently, however, it commences with a general swelling and irritation of the gums, together with much fœtor of the breath, a coated tongue, and much gastric disorder. Along the upper margin of the gum, or rather that which is in contact with the teeth, a line of ulceration now soon becomes developed; and this, when once begun, rapidly spreads, the gums, at the same time, being spongy, swollen, and very painful. Unless excited by some local cause, such as the irritation of a decayed tooth, it usually commences in the lower jaw, and from thence is communicated to the mucous membrance of the corresponding cheek. The irritation attending it affects the salivary and cervical glands in a remarkable manner; both become swollen, and the former secrete so profusely that the child appears to be constantly dribbling. In this form there is generally some febrile disturbance, and much gastro-intestinal disorder. If severe, it may not only cause destruction of the gums, but loosening of the teeth, suppuration of their sockets, and partial necrosis of the jaw. Its intensity, however, varies very considerably in different cases; in some it is so slight as to require little or no special treatment, whilst in others it can only be controlled by very prompt and energetic measures.

In the general management of these cases, we are directed to employ, locally, strong solutions of the nitrate of silver, or of the sulphate of copper or zinc, with or without astringent, stimulating, or detergent gargles, and to administer, at the same time, quinine, tonics, and a liberal diet. I formerly followed these instructions closely, but sometimes with equivocal success; and I am now, after repeated trials, disposed to give the preference to the following method of treatment. It consists in removing, in the first place, any apparent cause of irritation, such as a decayed tooth, should it exist, and in applying, daily, the dilute nitric acid of of the pharmacopœia, to the whole of the ulcerated surfaces, by means of a sponge, or camel's hair pencil; whilst, at the same time, the sesquicarbonate of ammonia is given in full doses, combined with citrate of iron. When the tongue is coated, and the alvine discharges are unhealthy, it is necessary to premise an emetic of ipecacuanha and squills, as well as a purgative of calomel and rhubarb. It is also necessary that the patient should be well supported by a nutritious diet, and an adequate allowance of malt liquor, or wine.

I will briefly add, that the employment of ammonia in these cases was first suggested to me from observing its beneficial effects in the ulcerative affections of the mouth and throat, which occur in children in connexion with scarlet fever. And, alone, it will accomplish a cure, as some of the following cases show, although less speedily than when combined with the citrate of iron and the local application of dilute nitric acid. The latter remedy appears to have a remarkable influence in improving the character of the ulceration and arresting its progress. The sloughy, dirty, yellowish appearance, which it generally presents, is soon changed for a florid, healthy, granulating surface; and this result would appear to depend upon the moderately-stimulating properties of the remedy, which are not disproportionate to the exhausted vital powers of the part. The following cases will serve to illustrate the results of this practice.

Case. J. F—d, aged 3, was brought to the Paddington Free Dispensary, Jan. 3, 1851, suffering from severe and well-marked ulcerative inflammation of the mouth. The gums throughout were swollen and spongy, and the margins adjoining the teeth were deeply ulcerated; the right cheek was swollen and tense, and, internally, the mucous membrane was extensively ulcerated; the breath was fetid, the salivary secretion very great, and the glands, below the jaw, swollen and painful; the tongue was much furred, the appetite bad, the bowels disordered, and the child's appearance generally cachectic.

Treatment. ℞. Ammon. sesquicarb., ferri ammon.-citrat., āā gr. v., quartâ quâque horâ sumend. ex aquâ.

℞. Acidi nitrici dil. ʒss.; ft. lotio modo dicto bis die utend.; ol. ricini ℥j. mane p. r. n. s.

Jan. 10th. The child is, in every respect, improved; the gums are looking healthier, as is also the ulceration of the cheek. *Persistet.*

Jan. 14th. The child is convalescent, scarcely any ulceration being any where perceptible.

Case. Mary S—r, aged 4, was brought to the Paddington Free Dispensary, Feb. 4th, 1851, suffering from ulcerative disease of the gums, throat, and inner surface of the cheeks. She had always been an ailing and delicate child, and had now a very strumous appearance. The disease was first perceived by the mother about a week ago, whose attention was drawn to it by the child's breath being very offensive; and, on examining the mouth, she found it ulcerated as described. The child's appetite is bad, her bowels irregular, and tongue coated.

Treatment. ℞. Ammon. sesquicarb., ferri ammon.-citrat. āā gr. v., quartâ quâque horâ sumend. ex aquâ.

℞. Acid. nitric. dil. ʒss., ft. lotio modo dicto bis die utend.

February 11th. Much better; ulceration, generally much less, and looking healthier. February 15th. Quite well.

Case. Edward B—t, aged 2½ years, was brought to the Paddington Free Dispensary, Aug. 1851, suffering from ulcerative disease of the mouth, lips, tongue, throat, and inner cheeks. His breath was offensive, the tongue foul, and the pain produced by the ulceration was so severe that he could neither eat nor drink without extreme suffering. His nights were much disturbed; he was feverish, and the bowels were a good deal disordered. The child had been, for some time, out of health, and indeed never very strong.

Treatment. ℞. ammon. sesquicarb., ferri ammon.-citrat., āā gr. v., quartâ quâque horâ sumend. ex aquâ.

℞. Acid. nitric. dil. ℥ss., ft. lotio modo dicto bis die utend.

Under this treatment the child's mouth got perfectly well in a week; but the medicine was continued for some time longer. On 20th Sept. the child was brought to me again; he was then in the possession of perfect health, and the mother told me that he was better than she had ever known him to be.

Case. Francis F—r, aged 2½ years, was brought to the Paddington Free Dispensary, Dec. 13th, 1850, suffering from severe ulceration of the gums, lips, and cheeks. She had never been very strong, and had latterly been living in a low, badly-drained house. She had been suffering from the disease for three weeks, and when admitted was weak, pale, and cachectic.

Treatment. ℞. Ammoniæ sesquicarb., ferri ammon.-citrat., āā gr. ijss., quartâ quâque horâ sumend. ex aquâ. ℞. Acid. nitric. dil. ℥ ss., ft. lotio modo dicto bis die utend.

Dec. 23rd. This treatment had been continued for rather more than a week, and the child is now perfectly well.

Case. Hannah W—e, aged 1½, was brought to the Paddington Free Dispensary, July 15th, 1851, suffering from ulceration of the mouth and gums. The child's breath was disagreeable, her tongue coated, and the stomach and bowels disordered. She had been living in a low unhealthy locality, and had been ill a fortnight before applying at the Dispensary, and had been daily getting worse.

Treatment. ℞. Ammoniæ sesquicarb. gr. iijss., sæpe sumend. ex lacte. ℞. Pulv. purg. gr. v., hs. pr. r. n.

July 25th. Ulceration healed, and child perfectly well.

Case. Isaac H—r, aged 11, applied Oct. 1st, 1850, suffering from ulcerative inflammation of the gums and mucous membrane of the right cheek. His father had observed that his breath was very offensive the preceding day, and on looking into his mouth found it ulcerated. The mouth had a strongly gangrenous appearance; the fœtor was very great. He could not masticate without difficulty, and the tongue was furred and excoriated. He was ordered six grains of the sesquicarbonate of ammonia every four hours, in water, and at the same time a nutritious diet, with porter. In a fortnight he was quite well. A brother and sister of this boy were attacked at the same time in a similar way, and recovered, under the same treatment, in about a fortnight.—*London Journal of Med., Oct.*, 1852, *p.* 875.

DISEASES OF THE URINARY ORGANS.

50.—ON THE PATHOLOGY AND DIAGNOSIS OF RENAL DISEASES.

By Dr. George Johnson, Assistant Physician to King's College Hospital, &c.

[Having spoken of a disease of the kidney characterized by a desquamation of the uriniferous tubes, Dr. Johnson proceeds to speak of one of which *non-desquamation* is the characteristic symptom. The particulars of the following case were furnished to Dr. Johnson by Dr. Henry Monckton. John Ager, aged 18, was admitted into the Dreadnought Hospital on the 1st of January, 1850, with rheumatic fever. From this he gradually recovered; but on the 15th of March his legs were found œdematous, his water being scanty and high coloured. Gradually the renal secretion seemed almost entirely to cease, and on the 19th, five days from the first symptoms of dropsical effusion being observed, he died. The urine, on the addition of nitric acid, became almost solid with albumen; but no casts of tubes, epithelium, or blood corpuscles, were found in it. These are the phenomena which, in his lecture, Dr. Johnson particularly dwells upon, viz., scanty secretion of highly albuminous urine—scarcely a trace of renal epithelium or of tube-casts—and urgent symptoms of suppressed secretion, often terminating fatally. Dr. Johnson then proceeds:]

In order to arrive at the true interpretation of this form of disease, we must again advert to the phenomena of desquamative nephritis:

I have endeavoured to prove, that the abundant shedding of epithelium, which characterizes that form of renal disease, is the result of a salutary effort to eliminate from the blood some abnormal products, the retention of which would doubtless lead to injurious consequences, while their ready escape from the blood is probably favoured by the free shedding of the epithelial cells, as the elimination of the scarlatina poison is effected by the desquamation which it excites on the surface of the skin. A consideration of these phenomena suggests the probability, that, in the event of there being conveyed by the blood to the kidney, any of those abnormal materials which are usually eliminated by means of the desquamative process, the *non*-occurrence of epithelial desquamation would be an unfavourable circumstance. The absence of desquamation in such instances is perhaps analogous to those cases of the exanthemata, in which the eruption is either entirely absent, or very imperfectly developed; and this depending not, as it appears, upon the blood being infected by a mild dose of the morbid poison, but upon some failure in the effort to eliminate it by means of the cutaneous eruption; the symptoms of blood-poisoning being meanwhile very urgent, and often quickly fatal. Instances of such an occurrence may occasionally be seen in the case of small-pox; and the case which I quoted in my last lecture from Sir B. Brodie, affords an illustration of what we may perhaps call an abortive carbuncle. Again: it has frequently been observed, that the most rapidly fatal cases of cholera are those in which there is either no purg-

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ing, or a very scanty secretion from the bowels; the patients quickly sinking either from an excessive dose of the poison, or in consequence of some failure and imperfection in the effort to eliminate it.

With reference to all the instances which I have adduced for the sake of illustration, it is important to distinguish between the essentially beneficial tendency of the primary morbid phenomena and the secondary consequences, which may be injurious and even fatal. Thus, in a former lecture, I alluded to the fact, that an abundant desquamation of epithelium may so fill and obstruct the uriniferous tubes as to arrest the process of secretion within them. A copious eruption of small-pox pustules may destroy the patient by the excessive irritation and the exhausting discharges which they induce; and the abundant discharges produced by the cholera poison will so effectually drain away the watery portion of the blood as to destroy the life of the patient; and yet, in each of these instances, consequences more speedy in their occurrence, and not less serious, would result from the absence of those pathological phenomena which a superficial observer might erroneously consider to be the essence of the diseases referred to.

A careful study of these and other allied phenomena, will show the importance of distinguishing the primary and essential cause of a disease from those outward and visible manifestations of it, which are in many instances the means adopted by nature for the removal of the evil, or for obviating its injurious effects. The distinction is not more important for the purposes of exact pathology than as being an essential condition for the correct and rational treatment of disease. It is evident, for instance, that the notion of scarlatina being primarily and essentially an inflammation of the skin, without reference to the condition of the blood, or the designed end of the cutaneous eruption, would be a great error in pathology, and, applied to practice, would lead to serious, and even fatal results. The cutaneous heat and redness might be speedily removed by the influence of cold, but injurious consequences would certainly result from the suppression of the eruption.

Before I had learned to recognize this non-desquamative condition of the kidney, and to give to it what now appears to be the true interpretation, I had, on several occasions, based a favourable prognosis upon the idea, that when the urine, though scanty and highly albuminous, is free from sediment, and contains neither casts of tubes nor renal epithelium, the kidney is in a state of simple congestion or of functional disturbance, and therefore favourable for the patient's recovery. It was only after repeated disappointments, and painful proofs that I had sometimes given a too favourable prognosis, that I succeeded in separating the large proportion of error from the element of truth contained in the idea referred to.

From what has already been said, it will be apparent, that the absence of desquamation is the characteristic feature of the condition of kidney now under consideration. The diagnosis of such cases during life must be based partly upon positive, and partly upon negative evidence. To the first kind belongs the fact of a scanty secretion of highly albuminous urine, the colour of which is nearly normal, or perhaps somewhat darker and less transparent than usual; while evidence of a negative kind is derived from the observation, that the urine contains neither renal epithelium nor casts of the tubes. The absence of tube-casts is, however, not constant, for in certain cases, which I believe to be essentially of the same kind, as indicated by the absence of all signs of desquamation, the urine contains a peculiar form of tube-cast, the observation of which will assist in the formation of a correct diagnosis.

[Dr. Johnson believes, that in the case above related—if the desquamativ e process had occurred—the disease might have terminated favourably, believing that the efficient shedding of the epithelium is an important means of eliminating abnormal products from the blood. Having related a case of an acute character, he proceeds:]

I will now give some account of the same condition of kidney occurring as a *chronic* disease. The condition of urine which indicates the existence of the disease in question is commonly as follows:—When first passed, the urine is clear, and either of the natural colour and appearance, or somewhat paler than ordinary. After standing, it deposits no sediment, or merely a slight cloud, composed, perhaps, of pavement epithelium from the bladder. The quantity of urine secreted daily is generally less than normal, and often it is much below the standard of health. The specific gravity varies considerably; it is seldom very low, and often it is up to, or even above, the healthy standard; but the daily discharge of solids by the kidney is almost constantly below the normal amount. The quantity of albumen varies according to the intensity of the disease; but in most cases it is very abundant, so that the urine, when boiled, becomes almost solid. On a microscopical examination, the urine is found to contain neither casts of tubes nor renal epithelium. I have found this to be the case in several instances of the disease. Not unfrequently, however, a careful examination detects some of the small waxy casts which I have before described as found in the urine of Lewis. In some cases, scattered blood corpuscles may be present—but this is not common; and a copious sediment of blood, either in the form of blood-casts of the tubes or otherwise, is still more rare.

The general symptoms which accompany the disease are usually serious in kind and degree. The blood becomes much impoverished by the copious drain of albumen, and at the same time it is poisoned by retained excrement. Dropsy, which is present in almost every case, is often excessive, and very little influenced by any kind of medical treatment. Congestion or inflammation of the lungs or serous membranes, and symptoms referrible to the nervous centres, such as coma and convulsions, are frequent, and often fatal.—*Med. Times and Gazette, May* 29, 1852, *p.* 533.

51.—ON CERTAIN IMPORTANT POINTS IN THE CHEMISTRY AND PATHOLOGY OF THE URINE.

By Dr. Arthur Hassall.

[The following are the results deducible from experiments, some of which are of an interesting and important character:]

1st.—The simple act of boiling an aqueous solution of urea is sufficient to determine the gradual dissolution of that substance, and its conversion into carbonate of ammonia, a result at variance with statements made on this subject, particularly with that advanced by Dr. Bence Jones, and which was particularly adverted to in one of the former of these articles.

2nd.—This conversion of urea takes place, after a time, in distilled water, even without the aid of the spirit-lamp, a result likewise opposed to a second statement made by Dr. Jones.

3rd.—The decomposition of urea is effected, either with or without heat, much more readily in fluids which are alkaline, and especially in those the alkalinity of which arises from the presence of lime in any form.

4th.—The conversion of urea is retarded, and sometimes altogether prevented, by an acid condition of the fluid in which it is present; and this is equally the case, whether the solution be subjected to the heat of the spirit-lamp or not; the more acid the fluid, the greater its power of resisting the decomposition of the urea.

5th.—Animal matter in a state of decomposition exercises a powerful influence over the transformation of urea; and this it does by producing an alkaline condition of the fluid in which the two substances are contained, the alkalinity being produced by the carbonate of ammonia generated during putrefaction.

It will be observed that this chemical explanation of the action of animal matter, in converting urea into carbonate of ammonia, is much more satisfactory than the vague and theoretical notion of Dumas, that the mucus of the bladder, by undergoing a putrescent change, acts, like yeast, as a ferment, and so aids the conversion of the urea.

The alkalinity of urine very commonly proceeds from the presence of carbonate of ammonia, which is derived in part from the animal matter in that fluid, and in part from the urea; but the circumstances which originate, and either facilitate or retard this conversion, have not hitherto been well understood. We are now, however, in a position to furnish a tolerably accurate and complete account of what these circumstances are. It has been noticed that in some urines the urea disappears in the course of a few days, while in others it remains unchanged for weeks, months, and even years, but the causes of these differences have not until now been satisfactorily determined.

Of urines, some are in a neutral or alkaline state when passed: others quickly acquire one or other of these conditions after being voided; while others, again, do not lose their acidity for a very long period.

Those urines which are alkaline when passed, may be so either from fixed or volatile alkali, or from both combined. In accordance with the results of the experiments described above, an alkaline condition of the blood from fixed alkali would have a tendency to produce a decomposition of the urea, even while contained in the circulating fluid, and so bring about a mixed alkalinity; and this perhaps is one explanation of the occasional presence of carbonate of ammonia in urine but just voided.

Out of the body, there is no question but that an alkaline condition of the urine from fixed alkali facilitates the decomposition of the urea into carbonate of ammonia.

But a more frequent cause of this conversion, and one, indeed, which is more or less in operation in every urine, is the decomposition of the vesical mucus, which, by giving rise to the formation of carbonate of ammonia, produces an alkaline condition of the urine, which, by reacting in the urea, occasions its transformation, and so increases the degree of alkalinity; and this decomposition of the mucus is in general the first change effected in the passage of a neutral or slightly acid urine to an alkaline state.

The decomposition of the mucus, like that of the urea, varies according to circumstances: thus, acidity and cold tend to retard the change; the amount of animal matter present produces also a corresponding variation.

The influence of vesical mucus in determining an alkaline state of the urine, has been shown by experiment 14; and it may be still further illustrated by putting aside two portions of the same urine, the one filtered, the other not, and noting the periods at which each becomes alkaline: it will be found that the unfiltered urine is always the first to undergo the change.

Those urines which, although acid when passed, quickly become alkaline, are found to be but feebly acid as voided, and to contain a greater or less proportion of animal matter, the natural tendency of which to decomposition is therefore not opposed by the condition of the urine as respects acidity.

Lastly, those urines which are long in becoming alkaline, are always either very acid, or they contain little or no mucus.

Now, as the development of carbonate of ammonia takes place in any urine quickly or slowly, and in greater or less quantity, in a corresponding ratio will the urea be affected, and disappear either quickly or slowly.

The experiments now recorded appear to explain satisfactorily the *modus operandi* of acid remedies in alkaline conditions of the urine, proceeding from constitutional and general causes—viz. by retarding the conversion of the urea into carbonate of ammonia.

They likewise admit of further important and practical application, in connexion with the phosphatic diathesis; but the consideration of this will be made the subject of a separate communication.

To return from this not unimportant digression to the more immediate object of these papers—viz. the consideration of the tests for sugar—it appears, then, that in slightly acid, neutral, and alkaline urines, carbonate of ammonia is developed from the decomposition of urine during the application of the heat ordinarily employed in making trial of Trommer's test; and to such an extent as to interfere, possibly, in some slight degree with the proper action of the test.—*Lancet, June* 12, 1852, *p.* 567.

52.—ON CHRONIC DEGENERATION OF THE KIDNEYS, WITH ITS VARIOUS CONSEQUENCES.

By Dr. George Burrows, F.R.S., and Dr. W. Senhouse Kirkes, of St. Bartholomew's Hospital, London.

[The following paper is a general account of the principal phenomena attending the progress of chronic disease of the kidneys. Although many devoted labourers have of late years employed their talents in investigating the relation of the kidneys to dropsy and albuminuria, yet it must be confessed that very much yet remains to be done before the obscurity which attends this subject, shall have been cleared away.]

One thing is certain, namely, that on whatever morbid process the changes observed in a degenerated kidney after death may have depended, the essential result is in every case the same, *i. e.*, the destruction of a greater or less amount of the proper secreting tissue of the organ, which by just so much is rendered useless as an excretory organ. And since no other tissue in the body appears to possess the property of compensating in any way for the destruction of a part of the kidney, by assuming the functions of this organ, it almost necessarily follows that, when either of these glands is, from any cause, seriously diseased, the elements of the secretion which they ought to separate will be re retained in the blood. So that whatever be the morbid process by which any considerable part of either kidney is damaged to such an extent as to have its functions temporarily or permanently suspended, there will equally result an accumulation of the constituent parts of the urinary secretion in the blood, and a train of morbid phenomena indicative of a poisoned state of this fluid will in consequence ensue. It seems highly probable that nearly all the secondary disorders by which the progress of chronic renal disease is characterised, are directly dependent upon the morbid condition produced in the blood by the retention of the various noxious and excrementitious principles, especially, perhaps, the urea, which ought to be separated from it at the kidneys. The constant existence of these excrementitious materials in excess in the blood must be productive of mischief in various ways, partly by rendering this fluid a source of irritation to all the parts through which it circulates; and partly, perhaps, by interfering with its own power of self-maintenance or assimilation, whereby it in consequence gradually becomes poor, and thin, and impoverished, and, while in this state, is ill-adapted for the nutrition of the various parts of the body, besides being liable to transude through the coats of its containing vessels, and so to produce various evils in different parts.

Although we are confessedly in much ignorance respecting the real pathology of morbus Brightii, or granular degeneration of the kidney, yet the symptoms of the local disease, and the various secondary disorders to which the vitiated and impoverished blood give rise, are so striking, and so readily apprehended in the present day, that there are, perhaps, no chronic diseases of internal organs which may be recognised with greater certainty, during life, than those of the kidney. The simple detection of albumen in the urine will often clear up the obscurity of a chronic and perplexing case, and throw light on a multitude of ill-defined and otherwise unintelligible symptoms. The cases and remarks in the present papers will be offered with the view of illustrating some of the main features by which the various forms of chronic renal disease, attended with albuminuria, are characterized. The case to which attention will be first directed, is one which seems to offer a good general example of the disease, watched from its commencement to its termination,—marked, in its progress, by many of the important disorders which usually accompany this disease, and displaying, after death, most of the pathological appearances observed in fatal cases of degenerated kidney.

Case. Robert Pinkerton, aged 40, was admitted into John ward, under Dr. Burrows, early in June, 1851. He was a stout, muscular man, but with a pallid, doughy aspect, and slight anasarca of the lower limbs; his skin was warm and moist; pulse 72, soft; bowels regular; urine scanty, slightly acid, sp. gr. 1022, and highly albuminous; he had some cough and shortness of breath, and a feeling of general illness, with inability to work. He was quite free from pain in the loins. A painter and glazier by trade, he had been engaged during the spring in glazing the roof of the Exhibition-building in Hyde Park, and frequently had to work many hours beyond the ordinary time. While walking to his work one day, he got wet through, and had to continue in his wet clothes till his return home in the evening. Before night, however, he felt chilly and stiff, and next day noticed his ankles to be swollen. Still he walked to his work, and continued at it for the next four days, when he was obliged to give in on account of the increased swelling of his legs, which rendered him almost unable to walk. He then became an out-patient at the hospital, and continued to attend for nine weeks, at the end of which time, as the dropsy still continued, he was admitted into the wards. Upon his admission, he assured us that he considered himself in good health up to the day when he was exposed for so many consecutive hours to the effects of cold and moisture combined. It therefore appeared reasonable, that, as his complaint had commenced after prolonged repression of the cutaneous functions, so his treatment should be directed to the restoration of these functions. Diaphoretics were accordingly prescribed, consisting of warm baths, and a draught of acetate of ammonia, with half a drachm of antimonial wine and spirits of nitre four times a day. From this plan of treatment, especially from the baths, he appeared to derive great benefit, perspiring freely—whereas, since the commencement of his illness, his skin had been almost constantly dry—and the anasarca of the legs sensibly subsided. In about a week, however, he became more feverish, and had an increase of cough and tightness in the chest, which, on auscultation, was found to proceed from a slight attack of bronchitis. A blister to the chest relieved these symptoms, and, in another week, he was able to leave his bed, free from cough, and with scarcely any anasarca, yet still ailing, and his urine largely albuminous. He was now placed on meat diet, and took five grains of citrate of iron three times daily; on which plan he continued during the remaining five weeks of his stay in the hospital, the use of a vapour-bath every other day being added, to promote the action of the skin, and an issue made and kept open in the arm. This latter remedy was employed with the intention of establishing a permanent puriform discharge, which might, in some slight degree, act vicariously and compensatory to the vascular system of the impaired excretory functions of the kidneys. On his discharge, early in August, two months from the period of admission into the hospital, there was still slight œdema of the ankles, and his urine was almost as highly albuminous as when he first came under notice, its specific gravity varying from 1015 to

1020; yet there was a manifest improvement in his general health, and he considered himself sufficiently well to resume his employment.

The complete absence of all evidence of previous disorder of the urinary system, together with the immediate supervention of dropsy upon prolonged exposure to the combined influence of cold and wet, seemed together sufficient to justify the assumption, that the renal disease, on which the albuminuria and dropsy depended, was of comparatively recent date. In this, as in every other case of the kind, it would of course be almost impossible to pronounce with any degree of certainty on the previous healthy condition of the kidneys, remembering how insidiously structural disease may creep upon these organs; yet, the suddenness with which the symptoms ensued in a man previously in good health,—the analogy afforded by many instances of dropsy aftor scarlet fever,—the comparatively high density of the urine (1022) which is rarely observed in advanced stages of degenerated kidneys,—and the absence of the more striking secondary disorders, such as affections of the serous membranes, protracted diarrhœa, and tendency to cerebral substance, so commonly observed in long standing disease of the kidneys, made it probable, that, up to the time of his being attacked with dropsy, this man's kidneys were in a comparatively healthy state. The absence of febrile symptoms, and of pain across the loins, which so commonly accompany a recent attack of inflammatory dropsy, may be explained by the fact of the disease having been in progress for nine weeks, and under treatment all the time; while the peculiar pallor of the man's skin, which at first might seem to militate against the view just expressed concerning the duration of the renal disease, is rendered quite intelligible by what is often seen in dropsy after scarlet fever, where the impoverishment of the blood appears to take place so rapidly, that the blanched anæmic state of the integuments and several tissues, is almost coincident with the development of the dropsy.

In November of the same year, rather better than three months after his discharge, this man was again admitted into the hospital, under Dr. Burrows, with an aggravation of all his previous symptoms, being now generally anasarcous, very weak, troubled with difficulty of breathing and cough, and with his urine highly albuminous, pale, and reduced in density to 1008. Again, by means of diaphoretic draughts and the vapour baths, the functions of the skin were called into play, and the dropsy and attendant distress began to subside, yet his breath continued short, and there was a gradually increasing difficulty of lying on the left side. At first, auscultation proved nothing beyond deficiency of breathing and impaired resonance at the lower part of the right side of the chest behind; but in a few days, with the increase of dyspnœa, the lower part of each lung behind, especially the right, was found dull on percussion, and scarcely any respiratory sounds were heard in these parts; while, about the inferior angle of the left scapula, and towards the axilla, a distinct pleural friction sound was detected. There was now evidence of the case being complicated by effusion, probably of an inflammatory character, into each pleura; and it may be observed here, that the pleural friction sound, which was first noticed on December 3, continued to be heard on the left side, frequently also on the right, whenever the man was auscultated,—which he was once or twice a week,—until the 12th of the following April, a period of more than four months. Together with this physical evidence of mischief in each pleura, there were also frequent darting pains in the sides, with persistence of cough and shortness of breath. He suffered, too, from frequent violent pains in the head,—another not uncommon symptom of advancing disease of the kidneys. For about three months after his second admission to the hospital, the treatment consisted principally of the vapour bath, repeated blisters to the chest, a diaphoretic draught (containing salts of potash, in combination with vegetable acid) three or four times a day, an occasional hydragogue purgative, and a generous diet, with a little wine. During all this time, however, there was little amendment; the anasarca certainly subsided a little, the fluid in the chest seemed to diminish, and the urine increased both in quantity and specific gravity; but there was no material improvement in the man's general health, and he was unable to leave his bed. His bowels also became irritable towards the end of this period, and he suffered from nausea and occasional sickness. About this time, too, he became very heavy and drowsy, occasionally passing almost into a state of stupor, while subsequently the stupor gave place to a kind of delirious excitement, which lasted for three or four days. Towards the end of February, 1852, the dropsy being again on the increase, and his dyspnœa and general distress being greater, he was ordered ten grains of gallic acid three times a day, a mutton chop for his dinner, and a little brandy and soda water to allay his occasional vomiting. In a week from this date, it is noted that his condition is improved; the anasarca less, the daily quantity of urine increased from one pint to two, its sp. gr. 1020, and the amount of albumen in it less.

The weekly notes from this time until his discharge, early in May, 1852, during the whole of which period the use of the gallic acid was persevered in, together with the employment of open blisters, show a progressive and almost uninterrupted improvement in all his symptoms: the anasarca steadily diminished, so that on his discharge there was scarcely any left; the daily quantity of urine averaged three pints, though it still remained charged with albumen; the pleural friction sound gradually disappeared, and the man's appetite, strength, and spirits were materially improved; and, as the warm weather advanced, he left the hospital with a fair prospect of getting pretty well through the summer.

In another month, however, he was re-admitted in a dying state, having been attacked the day after his discharge with diarrhœa, which never afterwards left him. On this his third and last visit to the hospital, he was greatly changed: his face pale and haggard; his tongue coated with a brown fur, red down the centre and at the tip; pulse 108, sharp; his bowels almost constantly acting, the evacuations consisting chiefly of shreddy mucus, occasionally mixed with blood; and, to add to his misery, he had almost constant hiccough, which had distressed him for a fortnight, and frequent vomiting, especially after food; his urine was very scanty, sp. gr. 1010, still highly albuminous.

He was ordered: Conf. aromat. ʒss., tinct. catechu ʒi., tinct. opii ♏v., aq. cinnamomi ℥iss. 6tis horis.

The next day (June 3), the diarrhœa being unchecked, and the singultus equally distressing, he was ordered:

Enema amyli c. tinct. opii ♏xv.; catap. sinapis epigastrio; brandy ℥iij., beef-tea Oj.

4th. No sleep; constant hiccough remains, and distresses him much; he is frequently sick, vomiting a bilious fluid; the bowels continue purged, the evacuations scanty, watery, and yellow, and occasionally containing blood.

Ordered: Acid. gallici gr. x., acid. hydrocyan. dil. ♏vj., tinc. opii ♏x., ex. aq. pimentæ, 4tis. horis. Empl. canth. epigastrio. Enema amyli c. tinct. opii h. s.

Towards evening the hiccough became very violent and distressing, and Mr. Wood administered a draught, containing ten minims of chloric ether, which produced very marked relief, and was followed by a few hours' tranquil sleep. The following day he was in less distress, and the hiccough was much less frequent.

During the three subsequent days, he remained in nearly the same state, the hiccough continuing, but less severe; the diarrhœa rather abated; his aspect pale and pinched; sordes collecting about his teeth.

On the 9th he was evidently sinking; his breathing oppressed, sordes more marked, voice feeble, hiccough entirely ceased, and the diarrhœa almost subsided. He lingered on till the morning of the 11th, kept alive by wine and constant attention. and preserving his consciousness till the last, death ensuing apparently from simple exhaustion, without any cerebral symptoms.

The body was examined eight hours after death. It was very pale, and slightly anasarcous below; the tissues exhaled a urinous odour; the heart was much enlarged, especially its left ventricle; the valves and muscular tissue were healthy. There was about an ounce of pale opaline fluid in the sac of the pericardium, while on the visceral layer of this membrane were one or two white patches of old lymph, together with a general milkiness of the surface, which seemed to indicate a previous inflammatory condition of this membrane; the coats of the aorta were much diseased; the lungs were congested and œdematous, but apparently healthy in texture. In both pleuræ were numerous vascular bands of fibrous tissue connecting the opposite surfaces together, while each lung was surrounded almost completely by a thin layer of tough old false membrane. In the peritoneal cavity, also, there was evidence of former inflammation in a peculiar milky appearance of the serous coat of the intestines, and in a false membrane surrounding the liver, and connected by bands of old adhesion to the diaphragm and adjacent parts. The false membrane enveloping the liver had compressed this organ, and given it a peculiar rounded form, and reduced it much in size; the spleen was very small, pale, and soft; the stomach and small intestine were healthy; the large intestine, with the exception of the cœcum, which was healthy, presented along its entire inner surface the evidence of dysenteric ulceration, the mucous membrane being eroded and worm-eaten by superficial ulceration, and variously coloured by patches of vascularity and films of greyish-looking material, composed apparently of fibrinous exudation or superficial sloughs of the mucous surface. The kidneys were remarkably compressed and flattened by the peritoneum, which was unusually firm and dense in the lumbar regions; the organs were small, very pale, and almost devoid of blood, the cortex being especially anæmic, shrunken, and narrow, slightly roughened on the surface, though without any obvious deposit, the cut surface presenting a smooth, homogeneous, pale yellow, bloodless appearance; the medullary structure appeared healthy, but was compressed, and of a pale flesh-red tint. There were several minute cysts in the cortex. Everything in the general appearance of the organs was indicative of a bloodless and atrophied state of their tissues, especially of the cortical part, and the results of microscopic examination tended to confirm this view; for of the few urinary tubules which could be discovered, the majority were very narrow, their interior destitute of proper epithelium, and their walls compressed and distorted by the coarsely fibrillated material within which they lay, and of which the principal part of the cortex was composed.

It is rare, in hospital practice, to have so good an opportunity of watching a chronic disease through all its phases unto death, as was afforded in this case. The man came under notice soon after the onset of symptoms, which, in all probability, were coincident with the commencement of his renal disease; he was under almost constant observation for upwards of a year, during which period most of the characteristic symptoms of advancing degeneration of the kidneys from time to time manifested themselves; and at length, being cut off by an attack of dysentery, an opportunity was afforded of seeing the ravages which the disease had committed primarily on the kidneys, and subsequently on other parts of the body. It seems to be now generally admitted, that if an attack of acute or febrile dropsy be not speedily subdued by appropriate treatment, there is a great chance of the subsequent development of symptoms indicative of chronic and apparently incurable disease of the kidneys. The case just related seems to bear out this view, the disease beginning with symptoms of inflammatory dropsy, which appear to have been never thoroughly controlled, and terminating with many of the signs of structural damage to the kidneys. Of the several secondary disorders by which the progress of chronic renal disease is usually characterized, the most prominent are dropsy, catarrh, a low kind of inflammatory affection of the serous membranes, disorders of the alimentary canal, consisting chiefly of dyspepsia, vomiting, and diarrhœa, and a tendency to serious and often fatal cerebral symptoms. Without exception, every one of these secondary affections displayed themselves in various degrees in the progress of the case under consideration. The details of them have already been given, and need not be recapitulated. The long duration of the pleural friction sound, during life, with the evidence of extensive fibrinous exudation discovered within the pleura after death, are worthy of note. The very obvious benefit resulting from the use of gallic acid, during the man's second visit to the hospital, is likewise deserving of special remark. Without at present considering either the general treatment or the pathology of chronic renal disease, it may be offered as a suggestion, whether the marked improvement attending the employment of gallic acid in this, and many other cases of renal dropsy, may not be due to the astringent property of this remedy, whereby the transudation of the serum of the blood, and the escape of albumen through the kidneys are in some measure controlled.

Of the morbid appearances found after death in this case, attention may at present be directed merely to those in the kidneys, the heart, and the large intestine. The condition of the kidneys was somewhat peculiar. Their small size, pale, anæmic aspect, dryness, compactness, and smoothness on section, together with the absence of any decided granular deposit, incline one to regard their morbid state as one of simple atrophy, rather than of granular degeneration. This is not a common condition in which to find the kidneys after renal dropsy, the congestion or other morbid process to which they have been previously subjected usually resulting in the deposition of new material, and not in simple wasting and atrophy of the component tissues of the gland. The permanent damage done to the secreting part of the organ, and the secondary mischief, falling, in consequence, upon the system at large, will, however, in either case, be nearly the same. Of the morbid states of other organs associated with chronic disease of the kidneys, none are more common than enlargement of the left side of the heart, often noticed quite independent of valvular disease or other manifest cause of local obstruction. In the present case, the valves were quite healthy; and, although it may be a question how much of the hypertrophy noticed in the left ventricle was due to the roughening and inelasticity of the coats of the aorta, yet the occasional absence of this cause also in other similar cases, makes it more than probable that the enlargement of the left side of the heart was in chief measure dependent upon the morbid state of the blood, in consequence of which the transit of this fluid through the capillaries is effected with less facility than when its composition is unimpaired. Although protracted diarrhœa is a very common feature in chronic renal disease, yet it is rare for this complication to hurry off the patient so rapidly as in the present case, and to leave traces, after death, of extensive, dysenteric ulceration of the large intestine. It may, indeed, almost be questioned whether the dysentery was in any other way associated with the renal disease than as an accidental complication ensuing in a subject already greatly reduced by upwards of a year's continued illness, and unable to contend against an enemy which, under circumstances of previous health, might have been successfully resisted. —*Med. Times and Gazette, Oct.* 16, 1852, *p.* 377.

53.—ON DIABETES.

By Professor Bennett.

The excretion of sugar in large quantities by the kidney, has for a lengthened period excited the attention of pathologists, and given rise to abundant speculation. It having been shown by Mr. Macgregor of Glasgow, that sugar was formed in the stomach from the digestion of food, while that principle was subsequently detected in the blood by the same observer, as well as by Ambrosiani, Maitland, and Percy,—the view of Rollo was, on the whole, considered the correct one, and the treatment he proposed has been, in its main features, followed by subsequent practitioners. This theory supposed that the sugar found in the stomach and alimentary canal, from the starchy and saccharine principles of the food, instead of being rapidly converted into other compounds, as it was supposed to be by Prout, was absorbed into the blood, and excreted by the kidneys. The treatment based upon this theory was, therefore, directed to keeping up nutrition from substances incapable of being converted into sugar; and it is worthy of remark, that such treatment has greatly diminished the excretion of sugar, without, however, suppressing it, and has also ameliorated the other symptoms. The researches of M. Bernard have introduced other views as to the origin of sugar in the animal economy. He admits that sugar may be formed in the process of digestion, and that a certain amount of it may, as a result of absorption from the alimentary canal, find its way into the blood. But he has shown that, in dogs fed entirely on animal food, sugar may be demonstrated to exist in the liver and in the blood of the hepatic vein, while it is absent in the portal vein. Moreover, he has shown that sugar is a normal secretion of the liver in all animals, from man down so low in the scale as the mollusca; and that, moreover, it is secreted by the liver of the fœtus. He has proved experimentally, that this function is increased and diabetes produced, by irritating the eighth pair of nerves at their origin in the fourth ventricle; while, on the other hand, section of these nerves destroys its formation. I have seen M. Bernard perform these experiments, and repeated them myself in this city, and have no doubt regarding the accuracy of the results. That sugar does not exist normally in urine and blood drawn from the arm, is explained by its rapid decomposition in a state of health, and its excretion by the lungs. But when so increased that the lungs cannot secrete the whole of it, then it passes of by the kidneys, and hence diabetes. It follows that this disease is of hepatic origin, and is capable of being excited artificially, by irritation of the eighth pair of nerves, although in man this and other causes have not yet been determined.

This theory of M. Bernard explains why Rollo's treatment diminishes the excretion of sugar, by cutting off all that enters the blood through the alimentary canal, and further explains why such treatment does not cure, because it fails to affect the hepatic organ. It appears to me also capable of throwing light on the good effects of opium, from its power of diminishing nervous irritability—effects which are universally recognized in this disease. No other practical results, however, are as yet derivable from it, inasmuch as we are completely ignorant of any therapeutic means capable of diminishing this secretion, when once found in excess. Further researches are required on this point, so that the attention of practitioners, no longer *exclusively* directed to the digestive organs, may, by new efforts, endeavour to control this singular disorder.

The diet ordered in this case is one which admits of very slight formation of sugar in the alimentary canal, and, together with opiates and the occasional use of the warm bath, is the best which has hitherto been adopted. Its good effects were well manifested, although it proves, in conjunction with the confinement of an hospital, very irksome to the patient.—*Monthly Journal of Med. Science, August*, 1852, *p.* 167.

54.—ON BRIGHT'S DISEASE OF THE KIDNEY.

By Prof. Christenson.

"*Symptoms of Bright's Disease, which, taken alone, might simulate other Diseases.*"—Professor Christensen, a Danish physician, who has already published several important memoirs on Bright's disease, has just published a paper bearing the above title (in the Hospital's Meddeleser, vol. 3, part 5).

That the primary pathological condition in Bright's disease lies in the blood is obvious from its morbid products, namely, the exudation of an albuminous fluid into the cellular tissue and the serous and mucous membranes; it is likewise shown in rarer cases by the retention of urea in the blood. This morbid secretion from the blood into the different parts of the body does not by any means occur simultaneously; it sometimes only presents itself in one part, but is more commonly followed by effusions into other parts or organs; moreover, if the effusion into one organ be suspended, it usually commences in some other part. Hence it is obvious that the symptoms may be very various, and that many phenomena which we might expect in the ordinary form of this disease, may be absent, so that, unless a proper examination of the urine be instituted, grave errors of diagnosis may be made. Christensen observes, that the symptoms which may simulate other diseases, are especially those of the brain, the air-passages, the stomach, and the intestine.

Cerebral symptoms are a consequence of retention of urea in the blood when the urinary secretion is suppressed or diminished, although it may sometimes occur when there is scarcely any apparent diminution of the quantity of urine. In these cases chemistry reveals the presence of urea in the blood to very considerable quantity, and occasionally a lesser quantity in the other fluids of the body. The morbid changes which the kidneys undergo in Bright's disease, may give rise to a suppression of urine, and if this suppression be gradual, the cerebral symptoms also come on gradually, and a peculiar apathetic soporous condition is observed. The blanched, and often somewhat puffy, cachectic countenance, has a peculiar expression hard to describe; the pupils are normal, or rather dilated, but are torpid in contracting. When the disease is slowly developed, there is occasionally a little wandering and mental disturbance (the quieter form of delirium); when it advances rapidly, there is delirium of a much more marked, although never of a furious, character. Hallucinations do not seem to occur, but there is often loss of consciousness. An involuntary and shrill scream is often uttered; and we sometimes observe a peculiar grasping action of the hands, or a fighting-like movement of the arms. There are also involuntary movements of other parts of the body, especially of the head; and convulsions of the muscles of the face are by no means rare. At length a comatose state supervenes; there is prolonged, tracheal, laborious, and sometimes stertorous respiration; and deglutition becomes very difficult, or is altogether impeded. The pulse is very uncertain, often slow, (not above 60,) never very rapid, usually about 100 in the minute. The excretions are passed involuntarily.

Of the symptoms connected with the air-passages, the most prominent are a peculiar laborious respiration, something like that which occurs in croup, but more closely resembling that which accompanies syphilitic ulceration of the larynx. There is more or less dyspnœa, but cough is not invariably present. On auscultation we detect a widely-distributed sonorous and blowing rhonchus in the lungs, which can often be heard at some distance. The anatomical indications of this condition are merely a diffused redness and puffiness of the mucous membrane of the air-passages. This affection of the trachea and bronchi is often combined with dropsy and other symptoms of Bright's disease; and as one symptom often acts vicariously to another, so an attack of this kind of bronchitis often takes the place of vomiting or diarrhœa, or becomes more intense when the œdema diminishes.

Gastric and intestinal symptoms.—Although vomiting and diarrhœa are amongst the most frequent of the symptoms which characterise Bright's disease, either or both are very rarely the only symptoms. Christensen has only seen six instances of this nature in several hundred cases. The vomiting rapidly debilitates patients; and if it is not supplanted by some other symptoms, as diarrhœa, a severe attack of bronchitis, well-marked œdema, or increased diuresis, it may prove fatal in a week. In one case the vomiting continued at intervals for a year and a half, in another case for about half a year. At first the vomited matters consist chiefly of mucus, but in a later stage they contain bile. The vomiting, unless when very continuous and severe, is unaccompanied by any very marked pain in the gastric region. Hiccough and eructations sometimes occur. Diarrhœa is one of the mildest symptoms of Bright's disease; and the author believes the extensive mucous surface of the intestinal canal separates and removes a large quantity of morbid secretion; and thus relieves other organs. As the diarrhœa depends on a simple exudation of albuminous fluid, without any inflammatory process, it gives rise to no pain; sometimes, however, a diphtheritic inflammation of the lower part of the ileum or of the colon is simultaneously present. Unless the latter complication is present the intestinal discharges are not mixed with blood or mucus, but are merely their liquid excrement. We have only space to notice the *first* of the *six cases* recorded by Christensen. In this case vomiting was the predominating symptom. The patient was supposed to be suffering from a slight attack of typhus, and his urine was not examined. On dissection, it was found that the cortical substance of the kidneys was hypertrophied, and that the pyramidal bodies were much atrophied; the tissue was hard, firm, and pale. The urine found in the bladder contained much albumen.—*Schmidt's Fahrbücher für* 1852, No. 2.—*Prov. Med. and Surg. Journal, Sept.* 15, 1852, *p.* 484.

55.—ON THE TREATMENT OF NERVOUS AFFECTIONS OF THE BLADDER.

By Dr. S. D. Gross, Professor of Surgery in the University of Louisville, &c.

[Irritability and neuralgia of the bladder have many points in common, indeed, few authors devote a distinct chapter to the latter affection. Neuralgic affections of this organ, in America, however, seem very common. Neuralgia of the bladder is described by Dr. Gross to have many symptoms in common with neuralgia affecting other parts; sometimes the pain is located to one spot, at other times it extends to neighbouring organs. There is frequent desire to pass water, and the urine is thrown out in jets, and in small quantity; a distressing soreness is left behind in the urinary passages. A systematic course of cathartics seems most beneficial. If the disease be complicated with amenorrhœa, the cathartics should be combined with aloetic and emmenagogue preparations.]

Carbonate of iron has been extensively employed by Dr. Gross, and with some success; but he expresses his belief, that when neuralgia arises from malaria, quinine and arsenic are vastly superior to all steel preparations. After proper purgative medicine, with or without general bleeding, quinine is to be administered in four-grain doses, every three hours, until fifteen or twenty grains have been taken. It is then to be discontinued, until the next day, when it is to be renewed, and the same quantity is to be taken in the twenty-four hours, when, in all probability, the paroxysms will have either ceased, or else abated very much in violence.

Larger and more frequent doses of quinine are objectionable, on account of the distress which is apt to be produced in the head. Dr. Gross then goes on to say,

"When the disease has been thus moderated or subdued, the best medicines to eradicate it are arsenic, strychnine, and aconite, in union with opium. The formula which I have been in the habit of using for many years past, both in vesical and other forms of neuralgia, is the following:

℞. Acid. arseniosi, gr. ij.; strychninæ, gr. j.; ext. aconite, gr. viij.; pulv. opii, gr. v. M.

"These ingredients should be incorporated with each other with the greatest care, and be divided into sixteen pills of equal size, of which one is to be administered every six hours, or four in the twenty-four hours. In some instances, the opium may be advantageously increased, or where it disagrees with the patient, it may be replaced by lupuline or hyoscyamus. When nausea ensues, the pills are to be used less frequently, or instead of giving one pill at a dose, only one-half or two-thirds of one should be employed at a time. Attention to this point is a matter of paramount importance, as it respects the benefit to be derived from this combination. Another rule is, not to continue the exhibition of the pills longer than a week or ten days at a time, to allow the stomach a short recess, when they are to be resumed, and taken as before. When administered with these precautions, arsenic, strychnine, and aconite seldom fail to produce a most favourable impression, and are often, of themselves, sufficient to effect a cure. When this is not the case, they should be employed along with other remedies, of which purgatives and the warm bath are amongst the most efficacious. With Fowler's solution of arsenic, so much vaunted in the treatment of this affection, I have but little experience; but I have given it sufficiently often to satisfy me that it is far inferior, in every respect, to arsenic in substance. It is more liable to nauseate, and does not exert the same controlling influence in arresting the disease.

"To moderate the violence of the paroxysm, large doses of narcotics are frequently indispensable. Of these the best are the salts of morphia, either alone or in combination with nauseants, according to the state of the vascular system. In some instances, where other means have failed to afford relief, I have derived the greatest benefit from the steady, persistent use of narcotics. I might, indeed, cite several cases in which the protracted exhibition of this class of remedies resulted in a radical cure. My rule is to give narcotics in full and sustained doses, taking care always previously to clear out the bowels, and restore the secretions. Where one article, or mode of exhibition, is found to disagree, another should be substituted. When the pain is very violent, or when narcotics cannot be taken by the mouth, opiate injections or suppositories should be used.

"An emetic of ipecacuanha, or tartrate of antimony, at the approach of the paroxysm, will sometimes have the effect of cutting it short, or materially abridging it. The remedy is particularly indicated when the disease is associated, as it often is in malarious districts, with gastric and biliary disorder.

"Much benefit may also accrue, in many cases, from the warm bath, or the application of steam to the affected part. This can be readily effected by connecting one end of a gum-elastic tube with the spout of a tea-kettle, filled with hot water, and placing the other under the bedclothes. Fomentations with hops, opium, or laudanum will also be highly serviceable." —*Med.-Chirur. Review, July* 1852, *p.* 78.

56.—*On the Treatment of Paralysis of the Bladder.*—[The following remarks are taken from the review of the works of Dr. Gross and Mr. Coulson on 'Diseases of the Bladder, &c.,' in the British and Foreign Medico-Chirurgical Review, July 1852.]

A clear and practical distinction can be established between paralysis of the neck of the bladder, and paralysis of the body of that organ; the first form being attended with incontinence, the second with retention. But we are apt to believe that this difference is hardly sufficiently attended to by many surgeons.

After an able division of the various forms of paralysis of the bladder, Dr. Gross goes on to speak of the treatment. He cautions the surgeon against evacuating the whole of the urine, accumulated in an over-distended bladder, at one time; as he is satisfied that he has seen several patients die from the severe depression induced by the sudden removal of the distension. In all such instances, he allows a small quantity of urine to remain in the bladder; and also applies a bandage to the abdomen, as after tapping or parturition. Cathartics he considers to be of the utmost service in all descriptions of paralysis of the bladder; and of these, calomel, with castor oil and turpentine, is his favourite. Emetics also are not to be neglected. Of remedies acting especially on the nervous system, strychnine, cantharides, and arnica, are the most potent, and are best given in the following formula:—Strychnine 1-16th of a grain, cantharides 1-8th of a grain, arnica from 3 to 5 grains three times in the twenty-four hours. Of arnica in paralysis of the bladder from fever, masturbation, and general exhaustion, Dr. Gross speaks very favourably. He prefers the tincture in doses of from forty to sixty drops thrice daily. The ergot of rye, much commended by some, has not supported its reputation in Dr. Gross's hands. Counter-irritation, such as a succession of blisters over the dorso-lumbar region, is useful in almost all but the inflammatory form of vesical paralysis. The actual cautery is also a proper remedy.—*Medico-Chirurgical Review, July*, 1852, *p.* 82.

57.—NOCTURNAL INCONTINENCE OF URINE.

By M. Trousseau.

M. Trousseau observes that the nocturnal enuresis of children and young persons takes place after they have been asleep one or two hours, and that they retain the urine during the rest of the night. As a possible explanation of this, he refers to the fact that there is erethism of the genital organs during the commencement of sleep; and asks then, whether there may not be a tenesmus of the bladder? But, he further asks, why should not the sphincter then tend to retain the urine?

M. Trousseau speaks highly of the treatment by belladonna, as recommended by MM. Brettonneau and Morand. In almost every case in which he has used it, he has found it successful.

The organs must be caused to lose their bad habits; and this may be done by awakening the children after they have slept an hour, in order that they may urinate. On the next night they are awakened a few minutes later, and the time of awakening is made later every night, until at last it is desisted from. This has sometimes effected a cure.

At the same time, pills containing a *centigramme* of extract of belladonna are given: a week after the quantity is raised to two, and then to three, rarely to five *centigrammes*. The child is now roused only on alternate nights, and if it has not wet its bed on those nights when it has been left asleep, it is not awakened; if it continues free from enuresis for a fortnight, the dose of belladonna is diminished. If the case goes on favourably, the treatment is alternately resumed and intermitted for some weeks, until it is finally left off. This is necessary, as the disorder may return after some months, in the manner of marsh fever.

In cases of incontinence of urine, eczema of the vulva or prepuce may be produced by the irritation of the urine: it may then extend to the meatus urinarius, and cause tenesmus of the bladder.

If belladonna fails, the syrup of sulphate of strychnine is sometimes found useful. If these fail, flagellation and stinging with nettles may be useful, as instruments of intimidation, or perhaps they may have some reflex power.

M. Trousseau finally describes an oval compressor, which he has devised for the treatment of nocturnal enuresis.

An elastic band is fixed round the body, and supports at the back a spring which reaches to the anus. To this is fitted a metallic plate, on which is fixed a truncated cone of caoutchouc, two or three *centimetres* (about two-thirds of an inch to an inch) in diameter at the base, according to the age of the patient, and the amount of compression required. The pressure may be increased or diminished by introducing the cone more or less deeply; and the size is varied by adding perforated shields of caoutchouc, in greater or less number, so as to diminish the length of the cone. Straps are passed under the thighs; and thus we have a light bandage, in no way inconvenient, which in boys, acts in some way as a sphincter, by compressing the neck of the bladder and preventing the urine from escaping, and imparts to the bladder the habit of remaining full during the night as well as during the day.

But as this method could only be applied in girls *per vaginam,* and then with great difficulty, M. Trousseau employs a modification of the instrument contrived by M. Gariel for arresting uterine hemorrhage. It consists of a caoutchouc bag, which is introduced beyond the hymen: by means of a tube it is inflated with air, and a stopcock attached to it is closed. The back presses on the lower part and neck of the bladder; and in the morning the instrument, having been emptied of air, is taken out and cleaned.—*London Journal of Medicine, Oct.,* 1852, *p.* 928.

58.—*On the Administration of Sal Ammoniac in Enlarged Prostate.* By M. VANOYE.—M. Fischer, of Dresden, has long been in the habit of administering this medicine, in large doses, in chronic enlargement of the prostate; and since he published an account of his success with it in 1831, various other German practitioners have supplied corroborative testimony. Seeing that surgical treatment is so often inefficient, this means would seem to supply a valuable resource, and this especially as it may be employed in conjunction with other remedies. In the present paper, M. Vanoye relates two cases in addition, in which the success obtained seems quite to justify former encomiums. In both, the gland became progressively and greatly diminished in size. Large doses are, however, required. We may commence with fifteen grains every two hours, and go on to double or treble this quantity, so that nearly half an ounce is taken *per diem.* When the dose given is too great, we are admonished by disorder of the digestive organs, a miliary eruption, profuse sweats, and especially by scorbutic symptoms. These ill effects may be prevented or diminished by the employment of mucilaginous vehicles, bitter extracts or aromatics, and a good animal diet. Persons suffering from hemorrhagic disposition, or affections due to poverty of blood, should not be subjected to this treatment.—*Bulletin de Thérapeutique.—Medico-Chirurg. Review, Oct.* 1852, *p.* 557.

59.—*On the Habitual Presence of Sugar in the Urine of the Aged.* —The 'Gazette Médicale' of last month contains an article on this subject, which is suggestive of important reflections on the pathology of diabetes. Our readers will remember the researches of MM. Bernard and Barreswill, which seem to prove that sugar exists normally in the urine, whatever diet be used, and that this saccharine elaboration by that organ is dependent upon the action of the pneumogastric nerve. A further question must, however, be appended to this discovery, viz., what becomes of this sugar after it has gained access to the general circulation? What is its use, and how is it eliminated? Although differing in their opinions on some points of this inquiry, most physiologists agree, that it is eliminated by combustion in the lungs, and one, M. Reynoso, has further sought to establish (Provincial Journal, Jan. 7,) the fact, that when the respiratory process is impeded, sugar is excreted with the urine, and has by experiment ascertained that sugar may thus be made artificially to appear in the urine. Thus far our information on this interesting subject had reached, when a new element was infused into the inquiry by the researches of M. Dechambre.

It occurred to this pathologist, that if M. Reynoso's theory be correct, sugar ought to be found in the urine of aged persons, as in them the respiratory functions are notably diminished in activity; he accordingly undertook some investigations, the result of which has been to induce him to announce, *that sugar is an habitual ingredient in the urine of the aged.—Provincial Med. Journal, May* 26, 1852, *p.* 278.

SURGERY.

AFFECTIONS OF THE BONES AND JOINTS.

60.—ON DISEASES OF THE JOINTS.

By Samuel Solly, Esq., F.R.S., Surgeon to St. Thomas's Hospital, &c.

[Mr. Solly remarks that disease of the hip-joint is for the most part a strumous disease. In some rare cases it arises in the cancellous structure of the head of the thigh bone without having extended to the acetabulum at all, and in such cases excision of the head of the femur might be performed with advantage, but it is exceedingly difficult to distinguish between the cases where the acetabulum is, and where it is not implicated. The following is Mr. Solly's description of the disease as attacking the child:]

Generally speaking, the child is first observed to limp in his walk, and on being questioned by his parents, complains of pain in the hip, or not unfrequently on the inner side of the thigh, near the origin of the adductor longus muscle. The pain is not usually severe, and consequently is too often neglected by parents until the disease has considerably advanced, as we have seen in the case which is our text for these observations.

If the patient is brought to you in this stage, you find that pressure over the joint in front will be attended with pain, for the synovial membrane is less covered in this situation than behind, and it is therefore more susceptible to the touch. Extension of the limb on the pelvis, and swinging it in the air while the weight of the body is sustained by the opposite limb, is also extremely distressing to the patient.

In the early and acute stages of the disease, when the joint is distended with an increased quantity of synovia, the buttock appears fuller than the opposite side; and this same fulness may be observed on the front of the joint in the groin. Still it must be allowed, that though it is not difficult to diagnose acute inflammation of this joint, yet it is difficult to state accurately the extent to which that inflammation has run. The hip-joint is so much covered in by muscles, that we cannot detect all the changes which go on in it, as we can more or less perfectly in the knee-joint, which from its exposed position can be much more easily examined. In the case of the knee-joint, we can compare the shape, form, and appearance of the sound joint so much more accurately with the diseased than we can in the hip-joint.

It has been said, that in the early stages of hip-disease the limb is lengthened. But here again the change is more apparent than real.

I believe that a very slight degree of elongation does take place, and from the following causes; but the very enumeration of the causes will convince you that this change must be almost inappreciable.

1st.—Relaxation of the muscles, allowing the bone to drop from the socket.

2ndly.—Effusion into the joint, distension of the capsule, and protrusion of the bone.

3rdly.—Thickening from inflammatory deposit of the adipose substance which occupies the centre of the cotyloid cavity.

In a practical point of view, I consider this lengthening, though, as I have already said, it is more apparent than real, important as diagnostic of the acute and active stage of the disease.

It is only in this stage that I have found any local depletion of service, for, as a general rule, and cartainly in the more advanced stages, leeches, and other means of local blood-letting, only do harm, by weakening the powers of the patient. It is in this stage that absolute rest is so important, and that calomel and opium are of real use.

Pressure of one articulating surface against the other does not much affect the patient, unless there is ulceration of the cartilages; and therefore this manœuvre is often a means of diagnosing this additional mischief. The mere pushing the os femoris directly into the acetabulum will not always give rise to pain, even if there is ulceration; but by giving the thigh a rotation inwards, thus jerking the bone against the inner side of the cotyloid cup, you can generally detect any increase of disease beyond mere synovitis.

After the disease has existed for some time, the rotundity of the buttock is lost, and the edge of the glutæus muscle no longer stands out in bold relief, the fissure separating the nates from the thigh almost disappears, and the line becomes more oblique. These changes all depend on the wasting of the muscles from disuse, consequent on the state of the joint admitting of but little motion.

The patient often complains of pain of the knee, referring it to the inner side. This pain has usually been considered sympathetic, and I believe that it generally is so, but M. Bonnet, to whose work I shall again have occasion to refer, considers that the pain arises "from actual disease in that joint." He is not able to prove this opinion by numerous facts, for he says, "I have neglected, as preceding authors have done, to open the knee-joint" in those cases in which he has dissected the hip-joint; but on one occasion when the hip had suffered from chronic disease, he found synovial disease in the knee, with absorption of the cartilages. He attributes this secondary affection of the knee-joint to the compression and distension which the knee-joint suffers from the false position in which it is placed by the fixed flexion and inversion of the thigh.

In the case of E. C., there was unequivocal shortening of the limb, so much so, that she required a sole to her shoe of at least four inches, to enable her to walk at all evenly. Now, whence this shortening? If we look at the head of the bone, we find its convexity diminished, but that is all. If we look to the neck, we find it very nearly the ordinary length in a female of her stature. No absorption of its exterior has taken place; the obliquity, also, is normal. It has not assumed the horizontal line which shortens the limb in old age. The explanation is simple, and rests upon a very important law in the economy—namely, that the development of every part of the living organism which is not normally employed during growth, is more or less arrested; and I feel no hesitation in saying, that if the diseased thigh-bone had been compared with its fellow on the opposite side, a considerable difference would have been discovered in the length, size, and height of the two bones.

In some cases of this disease, as you may see in one of my patients now in the hospital, the os femoris is actually dislocated, and the head of the bone lies on the dorsum of the ilium. In such cases there is no doubt regarding the shortening; but there are cases in which there is apparent dislocation, and the signs of which have been so distinct in the opinion of the attending surgeons, that they have felt no doubt on the subject, but in whom a post-mortem examination has proved that there was no displacement whatever.

But these observations must not lead you to suppose that, in all cases of disease of the hip-joint, the shortening of the limb can be thus accounted for, or that there is a positive shortening of the limb in all cases of this disease.

We have already seen that one of the characteristics of morbus coxæ is, that the thigh is flexed upon the pelvis, so that the toe can only just reach the ground; and so far the limb is shortened. It is a point of some importance, and it is one on which much has been written, to ascertain whether the limb is really, or only apparently shortened; and there are other cases in which the head and neck of the bone are removed under the action of carious absorption. Here, again, there can be no doubt the shortening is real. But in the greater number of cases the shortening is only apparent, not real. It arises from the alteration in the position of the pelvis from lateral curvature of the lumbar vertebræ; and if this curvature has not existed so long as to have become permanent, the error may be detected by placing the pelvis of the patient, when in bed, at its proper right angle to the spine, and then, if the diseased joint will permit the extension of the thigh, placing the limbs parallel. If it cannot be accomplished in this way, accurate measurement from the anterior superior spinous process of the ilium to the patella, and thence to the sole of the foot under the ankle, will generally decide the question.

I regard the case of E. C. as one of strumous disease of the head of the thigh bone. If this view is correct, I think we may derive some encouragement in our endeavours to arrest this sad affliction in the cases that come under our care. The disease appears to have been excited in the first instance by an accident; but she was not laid up or prevented following her employment at the washing-tub or elsewhere, as would have been the case if the accident had been attended by acute inflammation of the synovial membrane and ligaments, or its consecutive ulceration of the cartilages. It has been proved by Sir B. Brodie and others that this strumous affection goes on insidiously, accompanied by little pain. The disease, I conclude, extended slowly from the bone to the cartilage. The cartilages were slowly ulcerated; matter formed in the joint, and found its way out by several openings. In this stage of the disease she first came under my care, in 1841. I believe that the measures then adopted arrested the ulcerative process, and the suppurative action with its debilitating consequences. A conservative action was set up, fibrine thrown out, and that firm fibrous membrane organised which you see uniting the head of the femur to the acetabulum, and filling up the joint. But, unfortunately for the poor girl, a portion of the neck of the femur had died, was necrosed, and the dead portion, or sequestrum, which you see occupying the interior of the neck of the bone, remained to the day of her death a source of irritation and purulent discharge.

It behoves us, therefore, to inquire how this happened. My own view of the course of proceeding is, that the supply of blood was cut off from this circumscribed portion of the femur by the destruction of the ligamentum teres, and the artery which runs down the centre of it. The existence of this vessel has long been known to anatomists, and its importance in regard to the nourishment of this portion of the bone was well insisted on by Sir Astley Cooper in reference to the repair of fractures of the neck of the thigh bone within the capsule. But this may not alone have been sufficient; and we may then adopt Mr. Lloyd's suggestion. This author states, and Sir B. Brodie agrees in this view, "that in the last stage of this disease the bones not only lose the preternatural vascularity which they possessed at an early period, but even become less vascular than healthy bone."

But whatever be the explanation of the fact, the fact itself is a most important one, that a sequestrum may remain for years in the neck of the femur, discharging matter to the destruction of the patient, though the original disease of the joint which produced the sequestrum has been arrested, and the disease of the *joint* itself entirely cured. I do not know of any other case on record exactly similar. I have related it at the Pathological Society, and there were many surgeons of eminence present: none had seen its parallel.

Its importance can scarcely be over-estimated in a practical point of view. For though, in the first place, her general health during the later period of life seemed to preclude the possibility of operating without a fatal issue, and in the second place, the revelation, after death, of extensive visceral disease, showed that the operation must have been in vain, even if she had recovered from the immediate effects of it,—there are other cases in which the patient's health is good, with the exception of that depression which must accompany profuse suppuration, and in whom an operation would be warranted, and very probably lead to a complete recovery. Caries, limited to a small portion of the neck or trochanter of the femur, sometimes occurs, which might as well be removed, and with the same prospect of success, as the sequestrum we have just been considering. Mr. Knox, in some 'Observations on Excision of the Pelvic Extremity of the Femur,' has referred to several cases of this kind: two occurred in his own practice. In one which occurred in 1816, the disease had existed three years, but the operation of excision of the head of the femur had then never been proposed; and though Mr. Knox, feeling convinced that the joint was not implicated, was desirous of cutting down on the caries, his colleagues gave him no encouragement. The operation was unperformed, and the patient died exhausted. On dissection it appeared that the caries was limited to the outer surface of the trochanter major, and might easily have been removed by a file or by the head of a trephine.

The second case occurred in 1825 or 1826. The patient was a farmer in Roxburgh, and the case was so clear to Mr. Knox that he proposed operating; but as he was much out of health at the time, he intended recruiting his health by sea air, &c., first. However, in the mean time, he fell into the hands of another surgeon, who, not having the same prudence, operated at once, and the patient sank. On dissection it was proved the disease was confined to the trochanter major, the joint being perfectly sound.

Sir Benjamin Brodie has related the following very interesting case, in the last edition of his work, on 'Diseases of the Joints':—

"W. Kendrow was admitted into St. George's Hospital on the 4th of February, 1837. The knee-joint was slightly enlarged. There was a sinus in the anterior part of the head of the tibia, a little below the joint, through which a probe could be passed into the centre of the epiphysis, where it came in contact with a portion of dead bone, apparently loose in the cavity in which it was contained. The motions of the knee were unimpaired.

"From the history which the patient gave, it appeared that about a year ago he had suffered from a severe attack of inflammation of the head of the tibia, and at some time afterwards an abscess burst in the front of the leg, leaving the sinus which has been just mentioned.

"There had been two or three attacks of inflammation in the interval which had elapsed between the first attack and the time of the patient coming to the hospital.

"March 2nd. Having exposed the head of the tibia, I applied a trephine so as to enlarge the sinus which led to the interior of the bone. At the bottom of this sinus lay a detached piece of dead bone of the size of a horse-bean, but of very irregular shape; this was extracted without difficulty.

"A few days after the operation, the patient had an attack of rigor and vomiting, which was followed by an attack of erysipelas, of which he ultimately died.

"On examining the limb it was found that the whole of the upper extremity of the tibia was increased in size and density, there being a deposit of rough scabrous bone on many parts of its external surface.

"The cavity from which the dead bone had been extracted was of sufficient size to contain a large cherry, presenting a tolerably regular concave surface, but without any consolidation of the cancellous structure. This cavity communicated with the knee-joint in front of the spine of the tibia, by a narrow aperture. The cartilage covering the head of the tibia was in many parts completely absorbed, leaving the surface of the bone exposed, but not in a state of caries. In other parts the cartilage was converted into a substance bearing some resemblance to condensed cellular membrane, and in a few places a narrow strip of cartilage remained, not altered from its natural condition. In some parts the bone, where it was apparently exposed, was found, on close examination, to be covered by a very thin semi-transparent membrane. There was no pus in the joint. Although the head of the tibia was hard and dense, the condyles of the femur seemed to contain less earthy matter than under ordinary circumstances. The cartilage covering them was easily peeled off, and some portions of it were so thin that the colour of the bone could be seen through them.

"There is no evident reason why, if he had not been unfortunately cut off by the attack of erysipelas, this patient should not have recovered, retaining an useful joint."

Only a few days ago, in company with Mr. Fillitter, a surgeon in the Hackney-road, I saw a case in many respects similar to the one we have lately watched in the hospital. The subject of it is a gentleman of stout build, moderate height, and dark complexion; habits uniformly temperate. When a child of about six years of age, he was attacked with pain in the left hip-joint, and subsequently lameness. Twelve months afterwards, an abscess formed, giving rise to much constitutional disturbance, which reduced him greatly. He was seen at this time by Mr. Green, of St. Thomas's Hospital, who stated that he was labouring under disease of the hip-joint. After confinement for about a year and a half, during fifteen months of which the abscess continued to discharge, and a second, apparently superficial, formed over the buttock, he regained health and strength; the affected limb was shortened, and the shortening increased after he got about. A small opening remained over the fore part of the limb for four or five years, yielding a very slight discharge. This wound re-opened three times up to the age of nineteen years, since which time up to the date of the present attack, he has had merely occasional stiffness, with pain lasting for a few days. For four years previous to the present attack, he believed himself to have been entirely free from any local symptom whatever, and has frequently walked twelve or fourteen miles without fatigue.

In March, 1851, whilst in good health, he became troubled with pain, somewhat of a rheumatic character, in the outer part of this hip-joint, causing an apparent weakness in the limb. This was preceded by occasional stiffness, and followed by an abscess which opened below the trochanter. Six weeks after its first appearance, it was attended with a good deal of suffering at night. In May, a second opening formed, and he again consulted Mr. Green, who recommended rest, and sarsaparilla internally, and gave it as his opinion that the head of the femur was diseased, but the acetabulum not so. The discharge from these openings was flocculent, with thin purulent fluid, and the formation of the abscesses was attended with a good deal of destruction of substance. A third and very large abscess formed shortly afterwards at the outer side of the joint, from which he suffered great pain, relieved only by lying on the sound side, with the affected limb resting on the other, thereby removing pressure from the joint. Towards the latter end of July he recovered sufficiently to leave town, and remained in the country upwards of two months. On his return, he regained his usual health, and resumed his occupation. The limb, however, continued weak, and the openings remained. Early in November, in consequence, he imagines, of a little over-exertion, or the use of iodine injections, which he had tried for some weeks (strength of half a grain to one ounce of water), a fresh abscess formed, with symptoms similar to the last, in the neighbourhood of the joint, and compelled him again to lie by; and shortly after, a superficial collection of matter, apparently a suppurating gland, made its appearance at the inner side of the thigh. After these had discharged their contents, he became free from pain, and has continued so up to the present time (January, 1851). Minute fragments of bone have escaped with the discharge from the openings on the outer side of the joint.

Present state.—General health good; pulse ranging from 85 to 100; tongue clean; taste somewhat impaired, but appetite and digestion good; walks easily for a short distance, and climbs stairs readily; much exertion produces dull pain in the joint. There are on the fore part of the limb the depressed adherent cicatrices of old abscesses, and on the fore and outer parts four papillary openings of sinuses, three of which I ascertained to lead to bone, carious, certainly, but I could not detect a detached sequestrum; the discharge from these is flaky and thin. On the inner side are two openings of a superficial sinus. The limb is shortened to the extent perhaps of two inches and a half; is smaller in circumference than the right. The foot is everted, the trochanter approximated to the spine of the ilium; and on flexing the thigh on the trunk, which he can do almost to the full extent, the whole pelvis is most distinctly seen to move with it, rotating on the opposite femur, the joints of the lumbar vertebræ yielding considerably at the same time; so that the thigh-bone on the diseased side moves *with* the pelvis, but not in the least *on* the pelvis. I believe that in this case there is a sequestrum in the neck of the thigh-bone, and I therefore believe that an operation is justifiable.

I heard of a case, a few days ago, in which the head of the femur was excised; and after the operation had been performed, it was discovered that the head of the bone was sound, with the exception of a sequestrum in its centre, which might have been removed without the excision of the head.

You will learn from these cases, that one of the results of disease of the hip, knee, and other joints, may be the production of a sequestrum in the head of the bone entering into the composition of the joint; and you will see how important it is to ascertain, by a most careful and searching examination, the presence of such sequestrum, with a view to its removal by operation.

I cannot conclude these observations without adverting to the existence of long-standing disease of the liver in this case. The frequent concomitance of disease of the liver with disease of the hip, has been pointed out by Mr. Coulson, who states that, at the Margate Infirmary, leeches and other measures are oftener applied to this organ than to the affected joint. I am unprepared to account for this alliance.. I know not whether it should be considered cause or effect; but I am disposed to believe that they both arise from the same strumous diathesis.—*Lancet, May 29, 1852, p.* 510.

61.—ON SCROFULOUS AND RHEUMATIC INFLAMMATION OF JOINTS.

By Edward Stanley, Esq., F.R.S., Surgeon to St. Bartholomew's Hospital, &c.

[Mr. Stanley remarks upon the difference in the frequency with which certain joints are attacked by disease, and how exempt others seem to be from the like affections. An example of the former fact may be taken in the hip and knee-joints, and of the latter in the lower jaw, the sterno-clavicular articulation, or the heads of the ribs with the vertebræ. Some explain this by their greater or less exposure to external influences; but this cannot be the case, else why should the hip be more frequently attacked than the ankle joint? Others say that joints are more susceptible from the activity of their functions; but few joints are more exercised than the lower jaw, and yet few are more free from disease. After a few observations on some cases of anchylosis of the lower jaw he proceeds:]

I now come to the consideration of strumous inflammation of joints, and before proceeding to investigate its phenomena, the following questions demand attention:—1st. What are the circumstances which would lead us to regard the disease as strumous, when brought to the bedside of a patient? 2nd. In what condition should we expect to find the structures, viz., the bones, cartilages, and synovial membranes of a joint, provided the disease be strumous? With reference to the first question, I am unacquainted with any local symptom, any precise condition in the affected joint itself, which would enable us at once to decide on its strumous nature. We must look elsewhere. The age and aspect of the patient, the past or present existence of scrofulous disease in other parts, such as enlargement and suppuration of the cervical absorbent glands, strumous ophthalmia, tubercle in the lungs and other organs,—any of these, especially if actually co-existent, would justify us in regarding the disease as scrofulous. Often, indeed, these cases are obscure, and sometimes we are led to a wrong conclusion. The aspect of the patient is delusive, and should not be too much relied upon. Many instances occur in which the patient's appearance seems indicative of the existence of scrofula, whose subsequent progress and favourable recovery prove that such evidence is fallacious.

We have now to answer the second question. What is the state of a joint invaded by strumous disease? The morbid specimen I now exhibit shows the condition of the articular extremity of a bone in an extreme attack of this nature. The end of the bone is softened from absorption of its earthy matter, and its cancelli are filled with tuberculous deposit. It is, however, according to my experience, rare to meet with so complete an example of strumous disease as this specimen furnishes. In the majority of cases, I believe that no tubercular matter is found deposited, and when found, it is only in the last stages of the affection. Such a condition of bone, when it does exist, is, in my opinion, irreparable; and, when the surgeon is summoned to a case exemplifying the disease in this its latest stage, he can do nothing to restore the bone to its natural state, nothing to accomplish a cure. There is, however, an earlier stage in these affections, which you will often have to treat in private, although it is seldom seen in hospital practice—a stage amenable to treatment, a stage in which, generally speaking, the morbid impairment of the bone may be arrested, and its integrity restored. It is characterized by increased heat, and enlargement of the bone immediately above the joint. There, is indeed, increased vascularity, and low inflammation of the bone, which is quickly followed by expansion of the cancellous texture, and absorption of earthy matter. Ultimately in bone thus degenerated, tubercle is sometimes deposited. Such, then, is the state of the bone in a joint affected with struma. The other structures,—the cartilages, synovial membrane, &c., are in a state of low inflammation, inflammation which has commenced either in the bone or the synovial membrane itself, and which, if suffered to advance, is followed by its usual consequences,—exudation, thickening of tissues, and sometimes suppuration. Now the appropriate treatment for an attack of this sort is, perfect rest for the limb, and removal of all weight and pressure from the inflamed joint, so as to insure, as far as possible, its complete tranquillity. If inflammation exists in any activity, the judicious application of leeches will be beneficial; but it should be borne in mind that leeches must not be lavishly employed, as strumous patients cannot stand depletion. The remainder of the treatment is constitutional, and should be directed to the restoration of the general health, if that has failed; to its maintenance if it has not. To this end country air, or, where it is practicable, a resort to the sea-side should be recommended; a light, nutritious diet enjoined, and the state of the stomach and bowels be carefully attended to. The following particulars of a case which occurred to me some years ago, illustrate forcibly the truth of my observation, that the articular ends of bones rarely become the seats of tubercular deposition, even in well-marked examples of strumous disease.

A boy, ten years old, was under my care for scrofulous enlargement and suppuration of the cervical glands. While in the hospital, hip-disease supervened, evidently of strumous character, which ultimately wore out the patient. Examination of the body showed that the joint was disorganized; the soft tissues around were infiltrated with tubercular deposit; the capsule and articular cartilages partially destroyed by ulceration; the bone was dislocated on the dorsum ilii; the acetabulum widened, and containing tubercular matter. The mesenteric and other absorbent glands were infiltrated with tubercle. Tubercular ulceration was present in the intestinal canal. However, when a longitudinal section of the head of the femur had been made, no tubercular deposit was found in the interior of the bone. Absorption of earthy matter, and widening of the cancelli, had taken place, but no interstitial tubercle existed.

Not infrequently disease in the soft tissues around a joint, inflammation, and abscess, are mistaken for disease inside the joint; and, in some instances, eminent surgeons have amputated limbs under the impression that an irremediable articular affection existed, while, in reality, the exterior tissues alone were involved, the joint itself being sound.

Joints are liable to another form of inflammation, differing from that we have just reviewed,—"rheumatic inflammation." Examples of this disease occur generally in combination with rheumatic fever, and are, therefore, more prevalent in the medical than in the surgical wards of the hospital. The diagnosis of articular rheumatism is not usually difficult. When rheumatic fever is present, it is, of course, obvious; but when it is not, the implication of other joints, the cause and symptoms of the attack, and the history of prior rheumatism, will generally guide us to a right decision: the implication of other joints, because it is extremely rare to find rheumatism affecting one joint only; it attacks two or three simultaneously, or flies about from one to another: the cause and symptoms of the attack,—because we shall almost invariably find that the patient has been exposed to cold, or dampness, and because muscular pains are generally precursory to the articular inflammation. Rheumatic disease thus induced, is commonly marked by pain in one particular spot; the patient does not complain of general pain in the joint, but points to one especial locality, and describes it as the seat of all his sufferings.

Articular rheumatism is, moreover, intractable, leaving one joint and assailing another, or departing and recurring in the same joint. Joints are attacked by rheumatic inflammation in two ways; either their fibrous structures, their ligaments, suffer, or their synovial membranes. Now, the consequences of rheumatic inflammation of the ligaments may be serious, such, indeed, as may terminate in dislocation of the bones of a joint. For, under its influence, the ligaments become soft and elongated, so as to permit the bone to slip out of the cavity in which it is naturally fixed. In this way the head of the femur may be displaced upwards on the dorsum ilii without rupture or ulceration of either the capsule or the ligamentum teres. An example of such an occurrence happened some years ago in the practice of Mr. Lloyd.

A painter, in the enjoyment of good average health, was in the habit each morning of taking a warm bath. After having done so on one occasion, he experienced a pain in the hip-joint; one of the joints of the fingers also became swollen and inflamed. He consulted a medical man, who gave him hopes of speedy recovery. Nevertheless, he remained in bed five weeks, after which, the pain having subsided, he was told to get up: this he found himself totally unable to do, and, on examination, the limb was found to be shortened and inverted, the head of the bone having been dislocated on the dorsum ilii.

A case has also been related to me by Dr. Latham, in which articular rheumatism of long continuance produced dislocation. Some years ago, a young woman was in the hospital, under the care of Mr. Lawrence, suffering from rheumatism in the hip and wrist joints. She was confined for some time to her bed, and when permitted at length to get up found that she was lame, and that the lameness grew gradually worse. After a while she experienced a sensation as if the bone slipped from the socket when she walked. On examination, the limb was found of natural length, and its movements complete; rotation, however, was remarkably free; and when the thigh had been flexed on the pelvis, and was then rotated, the head of the bone could be evidently felt to pass over the brim of the acetabulum.

Cases like these illustrate the unusual results of a very common affection, which, although often obstinate and tenacious of existence, generally terminates well, leaving an unimpaired joint behind.

Rheumatic synovitis commonly ends in effusion. Ulceration of the articular cartilages may, however, supervene; and I have witnessed a case in which this condition was set up within nine weeks from the commencement of the attack, so that it was found necessary to amputate the limb. More usually, however, rheumatic synovitis gives rise to anchylosis, such anchylosis as may result from the adhesion of opposite synovial surfaces by effusion of fibrin, and which, as I have explained in an early part of the lecture, is called spurious, in contradistinction to true or osseous anchylosis.

Gonorrhœal rheumatism is a form of the disease occurring in conjunction with gonorrhœa, brought on by exposure to the vicissitudes of weather, and to the development of which, a certain unhealthy constitional state appears necessary. Unlike ordinary rheumatism, it confines itself to one or two joints, and unshifting, clings to them with remarkable tenacity. It is, in truth, an affection that has long baffled the powers of medical surgery. In many instances the patients appear to recover, but the complaint returns on the slightest exposure, and no permanent cure is effected. There is now under my care, in Lazarus, a Pole suffering from gonorrhœal rheumatism of the wrist joint. In him the disease has yielded for the present to three grain doses of the iodide of potassium, given three times daily; and, I am informed that the gonorrhœal discharge, which had become scanty, has reappeared since the mitigation of the articular disease. The best possible termination in these cases,—a termination which has ensued in the instance I have mentioned, is serous effusion into the joint; for when the fluid is absorbed, it is not unlikely a useful joint may remain. Some time back, a young man, aged twenty one, was my patient in the hospital, in consequence of a most acute attack of rheumatism in the shoulder-joint, following gonorrhœa. Though he was in a reduced state, I ordered him to be bled from the arm; mercury was administered; in fact, very active treatment was adopted. Serous effusion into the joint resulted, and within five weeks I had the gratification of seeing him leave the hospital with the functions of the joint in a great measure restored.

We occasionally meet with examples of rheumatic synovitis, occurring after parturition, which may originate anchylosis. The affection differs in no shape from ordinary rheumatic synovitis; but it requires gentle treatment, as the patients attacked by it are generally much debilitated, and frequently suffering from some uterine complication.—*Med. Times and Gazette, June* 12, 1852, *p.* 583.

62.—TREATMENT OF BURSAL TUMOURS.

Under the care of E. Stanley, Esq., and E. A. Lloyd, Esq., at St. Bartholomew's Hospital.

[There is no bursal tumour perhaps more difficult to get rid of than that sometimes presenting itself in front of the wrist joint,—from the friction constantly produced by every movement, preventing benefit being derived from absorbing applications—from the liability of its inducing irritation or inflammation in the surrounding parts,—and, lastly, from its frequently containing the little melon seed-like bodies which are continually liable to reproduce the inflammatory action.]

Some years ago, Mr. Syme, alleging that the destructive nature of the inflammation set up in the attempts at cure by setons, injections, or small incisions, was due to the manner in which the part was bound tightly down by the annular ligament, introduced the practice of dividing the latter, and laying the whole swelling freely open. At the time of publication of his paper on the subject, five cases had been thus treated, and with very satisfactory results. The propriety of making free incisions is undoubted; for, even should none of the loose little masses above mentioned chance to be present requiring removal, still they are absolutely necessary to prevent the very injurious degree of tension which would otherwise be produced by the inflammation of a structure so firmly bound down, and to allow of the free escape of the discharge. Still, however, the division of the annular ligament being a severe procedure, is one which English surgeons are unwilling needlessly to adopt, and that it is not always necessary is proved by the following interesting case, which occurred lately under the care of Mr. Stanley:—

Julia C., a healthy young women, aged 17, had been troubled for seven years with a large ganglionic swelling in front of the right wrist, which had latterly much increased, and completely disabled her from grasping either knife or pen. The tumour in the palm had attained the size of an egg; it was freely fluctuating, and communicated with a smaller one below the palmar ligament, and immediately in front of the wrist joint. It has been subjected to persevering treatment, in hopes of procuring the absorption of the fluid, and with only very slight success, for, as soon as the counter-irritant was omitted, it relapsed to its old state. Among the means which had been used, were constant pressure, blisters frequently applied, and kept open with sabine cerate, a strong solution of iodine repeatedly painted over the part at short intervals. It appeared useless, therefore, to expect any further benefit from remedies of this class, and Mr. Stanley at once determined to attempt a radical method of cure. A free incision was accordingly made into each division of the swelling, the intervening annular ligament being thus left uninjured, while the freeest possible means of escape was provided for the discharge. A considerable quantity of thick, glairy fluid was evacuated, but no solid bodies. Some large tents of lint were introduced into each wound, and the whole hand placed in a poultice.

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During the first week, there was a considerable degree of constitutional disturbance, and much local swelling, but these symptoms gradually subsided as a free process of suppuration became established, and no burrowing of matter, or extension of inflammation to the surrounding parts took place. Five weeks after the operation, the wounds were nearly closed, and passive motion was resorted to. In a fortnight more, when she left the hospital, the wounds had quite healed, all swelling was removed, and she was able to very nearly close the hand. When seen a few weeks afterwards, she was able easily to grasp objects, and could use the hand for most ordinary purposes. All trace of the tumour was perfectly, and, in all probability, permanently obliterated.

Among the very various modes of treatment which have been resorted to for the cure of the common enlarged bursa patellæ, perhaps the practice of first drawing off with a small trocar as much of the contained fluid as possible, then applying either a blister or a strong solution of iodine, and ultimately supporting the part with a mercurial plaster and bandage, is the most successful. It is frequently very speedy, often permanent, and always safe. It has also the additional recommendation of not necessitating any confinement to bed. The conversion of these tumours into acute abscesses by the introduction of setons, although recently so much praised, is a practice not seldom productive of disagreeable consequences. Its great advantage, of course, is, that the bursa having suppurated and become obliterated, there is no chance of its ever refilling; but even this, we should imagine, may often be to a great extent counterbalanced by the fact, that the patient is ever after obliged to kneel on a cicatrix.

It would appear that cases in which the tumour has recently formed are peculiarly ill-adapted for this mode of treatment.

A stout, plethoric lighterman, aged 28, was admitted into St. Bartholomew's Hospital six months ago on account of a tumour, the size of an egg, in front of his right patella, which had formed in the previous week. It was quite painless, and apparently free from inflammation. A seton was introduced, consisting of a single thread, and, although he was kept perfectly quiet in bed, yet it occasioned such intense pain, accompanied with rigors, etc., that it had to be withdrawn in twelve hours. For several days the pyrexial disturbance was most severe, attended with great swelling of the parts about the knee. The abscess which formed was freely opened, and he ultimately did well.

There is at present, under the care of Mr. Lloyd, an old man, by trade a carpenter, in whom, while in perfect health, the bursa in front of the left patella suddenly became much enlarged. It was unattended by pain, but, as it interfered with his occupation, by preventing him from kneeling, he at once applied for surgical advice. The gentleman whom he consulted passed though the tumour a single thin ligature thread, and allowed him to walk home. The inflammatory process commenced almost immediately, and the rest of the day, and the following night were passed in what he described as most intense suffering. On the next morning he applied for admission at the hospital; the seton was at once withdrawn, and the large abscess which it had occasioned laid freely open. During the following week, he progressed satisfactorily, when all at once another attack of inflammation took place, the thigh and leg became much swollen, and a large collection of matter formed around the whole front aspect of the joint, which was attended with great local pain and very serious constitutional disturbance. This second abscess has also been opened, the swelling is now much subsided, and he appears likely to recover favourably, after having, however, for some days, been placed in a really critical position.

These cases are not the only ones in which we have observed undesirable effects follow the employment of setons; but they are sufficient to make it obvious that the remedy is not adapted for indiscriminate use.

Probably the cases for which it is most suitable are those where the enlargement is very chronic and has resisted the ordinary measures.

Adventitious bursæ, when exposed to continued irritation, sometimes become converted, by chronic inflammation, into almost solid tumours. We have noticed lately, in the wards of St. Bartholomew's Hospital, several examples of this condition. In one the tumour was seated on the shoulder of a young man who was in the habit of carrying a basket on that part. It was of considerable thickness, about three inches across, and almost round. To the finger it felt firmish, and almost solid, and communicated little, if any, sense of fluctuation. A transverse incision was made across it, and a small cavity was found in its centre containing fluid, while its walls, which were three quarters of an inch in thickness, were composed of layers of false membrane, of a reddish colour. In a second case, the disease was seated over the external malleolus of a tailor's apprentice, and was evidently owing to the pressure exercised on that part when seated cross-legged. The patient stated that the affection was one from which tyros in the trade very frequently suffered. It was treated in the same manner as the preceding case, and its section exhibited precisely similar characters. Both of them healed kindly after free suppuration, but the removal of the surrounding thickening was a very slow process.

In all varieties of enlarged bursa in which the knife is resorted to, it is important to remember, that the incision can scarcely be too free. A small puncture usually serves to excite acute inflammation of the cavity, which is much aggravated by the tension to which the part when swollen is subjected. By an incision extending completely across the swelling, all this is prevented, and a mild process of suppuration, entirely free from constitutional disturbance, is usually all that follows. — *Med. Times and Gazette, Sept.* 11, 1852, *p.* 262.

63.—*Case of Enlarged Superficial Bursa and Ganglion.* By HENRY SMITH, Esq., Surgeon to the Westminster General Dispensary.—[The usual method of treating diseased superficial bursæ is both uncertain and inconvenient, and from their situation, it is highly important they should be radically cured so as to bear the pressure to which the parts under which they are placed are subjected. The ordinary treament of diseased bursa whether by counter-irritants or excision, and that of ganglion by pressure, rupture, excision, &c., cannot but be attended with considerable risk. Mr. Smith says:]

The object intended, then, is to produce inflammation and suppuration, so as to obliterate the cavity, or at least so alter the structure of its interior as to prevent it from further secreting the peculiar fluid which mainly constitutes the disease. The mode I adopt is this. I make a free incision into the bursal tumour, let out its contents; then, taking a camel's-hair pencil, it is dipped into a strong solution of iodine, and applied to the interior of the sac. A small strip of lint is then inserted into the wound, and kept there; inflammation and suppuration ensue; the consequence is, obliteration of the cavity, or at least an altered condition of its secreting surface is produced, and the disease is permanently and radically cured. In some instances, if care is not taken, and if the patient's system be out of order, the inflammation may be excessive, and produce great inconvenience; but this is to be guarded against by telling him or her to keep the limb quite quiet for a day or two, to apply constantly a warm poultice, and to keep the bowels well open by saline medicines. This treatment is not to be adopted in all cases, but merely in those chronic enlargements which have existed for months or years, and in which other remedial measures have been tried; and, in those cases where the walls of the bursa have become so thickened as to constitute a solid mass, excision doubtless is the sole measure.

In ganglion the following method of treatment, producing the same results, is now usually adopted by me. This consists in threading a small needle with a single thread of silk, passing it through the tumour, and leaving it there for a few days, until suppuration is effected. This process is permitted to go on for a day or two, and at the end of that time a cure will be found to take place. In one case of a young lady, this method brought about a perfect cure after she had long been under the care of two surgeons, one of whom had punctured the tumour subcutaneously twice, and the other had punctured or burst it, and used pressure for several months, all without the least benefit. The same precautions are necessary here as with the enlarged bursa, too much inflammation may be excited; consequently, it is necessary to tell the patient not to use her hand, but to keep it in a sling, and, when suppuration occurs, apply a poultice. In one case of mine a young lady practised violently on the piano after the operation, and inflammation of the hand and fore-arm took place, which considerably protracted the cure. In some instances, however, it will be found necessary to tell the patient to exercise the hand, as sufficient inflammation may not be produced.—*Med. Times and Gazette, July* 10, 1852, *p.* 34.

64.—ON A NEW MODE OF REDUCING DISLOCATION OF THE THUMB BACKWARDS.

By M. Demarquay.

In spite of the numerous investigations that have been made into this subject, the procedures for the reduction of the dislocation of the thumb, recommended even by high authorities, not unfrequently fail on trial. M. Demarquay having recently met with a case in which these difficulties were overcome by a very simple manuœvre on the part of M. Roux, he presents in this paper an account of the investigations which this led him to undertake.

A lady, æt. 30, while descending hastily from a carriage, fell upon the pavement with all the weight of her body resting on the extended right hand. A dislocation of the thumb backwards ensued, for which M. Demarquay was consulted about fifteen hours after the accident had occurred.

The right thumb formed an obtuse angle with the corresponding metacarpus, the anterior extremity of which sensibly projected into the palm. All flexion and extension were impossible; the hand was swollen and violaceous, and the least touch caused great suffering. The patient having been brought into a state of anæsthesia, traction was made by Charrière's forceps, in the direction of the axis of the first metacarpal bone; and when the posterior portion of the phalanx was brought to the level of the metacarpal surface, flexion was employed. This procedure, tried again and again, however, failed to accomplish reduction. After various other efforts had been made, M. Roux was called in, and he employed the same manœuvre as just stated; but prior to flexing the thumb, he imparted to it a *rotatory movement inwards,* and reduction was easily accomplished.

To obtain an explanation of this result, M. Demarquay repeatedly investigated the subject experimentally on the dead body. When a luxation of the thumb backwards is produced, the terminal extremity of the first metacarpal bone passes between the two bundles of the *flexor brevis pollicis*, a portion of the external border of which it often tears, and is to be felt just under the skin. It is now enclosed in a muscular "buttonhole" aperture, formed outwardly by the *abductor pollicis* and the external part of the *flexor brevis,* and inwardly by the inner portion of the *flexor brevis,* the transverse *adductor,* and the very strong tendon of the *flexor longus pollicis.* The anterior ligament always breaks near the metacarpus; so that in from fifteen to twenty experiments, it has never been once found interposed between the articular surfaces. In many of the experiments, both the lateral ligaments, and, in nearly all, the external, have been broken. The difficulty in reduction does not arise from the interposition of the anterior ligament between the articular surfaces, as supposed by some, or from the persistence of the lateral ligament, as conjectured by others; but from the surrounding of the metacarpus by the fleshy "buttonhole" already described. The remedy is not the incision of this, as recommended by some authors, but the extricating the head from its grasp by the procedure adopted by M. Roux. The head and forearm are to be placed between pronation and supination. The surgeon seizes the terminal portion of the phalanx of the thumb with the forceps held in his right hand, and exerts traction on the part, while with his left thumb and index finger he pushes the projecting metacarpus firmly backwards, taking care to prevent it from advancing during the subsequent flexion. When the extension has been for some time made in the direction of the axis of the thumb, a marked rotatory movement inwards is to be effected, which will disengage the metacarpus from the external band of muscles that surround it, and enable them to slide in front of its head. This done, the tractions are to be continued until the posterior part of the phalanx is brought to a level with the head of the metacarpus. Flexion of the thumb is then to be performed, at the same time that with the thumb of the left hand the displaced metacarpal bone is forced backwards.—*Medico-Chirurgical Review, Oct.* 1852, *p.* 414.

65.—ON A NEW APPARATUS FOR THE REDUCTION OF DISLOCATIONS.

By Dr. Broxholm.

[At a meeting of the Medical Society of London, Dr. Broxholm exhibited an apparatus for the reduction of dislocations, and stated that]

Having found the ordinary pulleys insufficient to produce the required kind of extension in the reduction of dislocations, particularly those of long standing, he was induced to devise an apparatus by which that object might be attained. In the construction of an instrument to produce the requisite kind and amount of extension, it appeared to him that the power exerted by a screw was that which was most likely to effect the purpose; and with that idea, he invented an apparatus, and had it made by Mr. Coxeter, which has in every respect realised his anticipations, and which quite supersedes the ordinary pulleys; even the patient could, if necessary, make the requisite extension himself. The object in employing the pulleys, as every one knows, is to make and keep up a sufficient amount of extension for a given time, that extension being well-regulated and gradual. Manual exertion, unaided by instruments, is incompetent to produce such effects. Now, the pulleys in ordinary use exert their influence by a series or succession of jerks, which are likely not only to be productive of great injury, particularly to the soft parts, but also to occasion a great amount of unnecessary suffering to the patient, without so effectually wearying the muscular structure,—an object so desirable in the reduction of dislocations. The apparatus Dr. Boxholm has invented, possesses great power of making extension, which can be well regulated, and made very gradually, and continued manual exertion is superseded by the ordinary power of the instrument itself. Very little force is required to produce an extraordinary degree of extension, and which, as before stated, when once made, can be kept up without the slightest manual interference. The length of extension will be four times that of the ascension which the screw, when turned to the right, causes the moveable piece to make; consequently a very small apparatus is sufficient for the fulfilment of the intention; in fact, the apparatus possesses the power of the ordinary pulleys in an increased degree, without their objections, as well as the nicely-regulated action of the screw of the tourniquet. The next object to be effected, when the requisite degree of extension has been produced, and the articulating extremity thereby brought within due limits of the situation from which it has been displaced, is to suddenly disengage the extending apparatus, when the *tactus eruditus* will complete the reduction. Dr. Broxholm has added an appendage to the extending apparatus to carry out the above intentions.

The apparatus was used successfully a week ago, when the ordinary pulleys had failed, in the reduction of a neglected dislocation of the humerus forwards, of between ten and eleven weeks' duration.—*Med. Times and Gazette, May* 29, 1852, *p.* 553.

66,—CASES OF UNUNITED FRACTURE.—UNION PROMOTED BY THE INTRODUCTION OF IVORY PEGS, ACCORDING TO DIEFFENBACH'S METHOD.

CASE 1. At Guy's Hospital, under the care of JOHN HILTON. Esq., F.R S.
CASE 2. At King's College Hospital, under W. BOWMAN, Esq., F.R.S.
CASE 3. At King's College Hospital, under W. FERGUSSON, Esq.,F.R.S.
CASE 4. At City of Dublin Hospital, under DR. GEOGHEGAN.

[In 'The Lancet' for 1851, Vol. II., page 344, there is recorded a case of the above nature, treated by Mr. Stanley with the ivory pegs, where bony union was promoted. The following case has recently been under the care of MR. HILTON:

Case 1. George P., aged 65, a healthy looking man, whilst going up stairs, missed his footing, and fell, by which his tibia and fibula were broken, about midway between their extremities Only partial success followed attempts to reduce the broken bones, and after the case had been treated sixteen weeks with every care, no union was found to have taken place. The patient was then sent into the country, and after again being fourteen weeks in bed, no improvement was found to have taken place.]

On the 11th Dec., 1851, Mr. Hilton again admitted him, and finding the bones still ununited, resolved upon trying the various means which have been recommended for promoting union. Mr. Hilton began by introducing two steel needles between the fractured extremities of the bones to excite an inflammatory action. The needles were kept in their position for several days, and gave rise to very painful swelling and inflammation, from the wound down to the ankle. This procedure did not, however, lead to any consolidation.

On the 1st of February, 1852, seven weeks after the patient's third admission, Mr. Hilton determined on giving a trial to Dieffenbach's plan of exciting union in fractured bones; which, as is well known, consists in driving polished ivory pegs through the extremities of the fragments. This was accomplished in the following manner:—Mr. Hilton made two apertures with a lancet in the skin, over the upper or projecting portion of the fracture, side by side, and about three-quarters of an inch apart. A small gouge was then passed somewhat obliquely through both ends of the fractured bone and the intermediate soft structure; its passage through the outer shell and cancellated structure of the bone being distinctly recognised by their relative density. The two pegs, each an inch and a half long, were then passed into the holes made by the gouge and lancet, and driven home by the sharp blow of a hammer, so that the top or head of each peg, was rather below the level of the surrounding skin.

A good deal of swelling and inflammation soon supervened about the seat of the operation. About four weeks from the introduction of the pegs, the patient, after, as he states, making some little exertion to move himself in bed, lost about three or four ounces of venous blood by the side of one of the pegs. This peg Mr. Hilton endeavoured to remove with the forceps, but only succeeded in lifting it to about half an inch.

The whole limb was now raised in bed, and cold lotions applied over the fracture. No more bleeding occurred, and in about a fortnight the peg came out spontaneously, or was pushed out by granulations growing in its track. Three weeks after Mr. Hilton pulled out the second peg.

On examining the leg, there was no doubt that bony union was proceeding, but there was still some little yielding at the fracture, which was rendered evident on trying with some force to bend the bone at the seat of the fracture. The limb was then laid on a splint, and supported in position by side-splints, and a bandage so arranged as to leave the holes previously occupied by the pegs exposed. These apertures were covered by a bread poultice.

On June 7th, four months after the introduction of the pegs, the splints were taken off, and consolidation found nearly complete. The patient left the hospital on the following day, with a bandage and pasteboard upon the leg, and was desired to continue to move about with his crutches for a week or two, and then to use his leg gradually, and with care.

July 8th, 1852, five months after the operation, and one after leaving the hospital.—The patient can now walk with the aid of a stick; the bones are united, but the leg is weak, the muscles being much wasted from a protracted inaction of twenty-two months.

This is certainly a very favourable result; and this case, coupled with Mr. Stanley's, (see above), will no doubt encourage surgeons to have recourse to the exciting action of the pegs in instances of the same kind.

[Every case, however, is not so successful, as is found by the following under Mr. Bowman.

Case 2. William L., aged 13 years, was admitted Dec. 16th, 1850. When three months' old, he suffered a fracture of both bones of the right leg, and he was allowed to grow up to the age of thirteen, without any serious endeavour being made to remedy the defects. When admitted, the deformity was extreme; the extremities of the tibia and fibula being placed over the middle of the dorsum of the foot. The whole limb was also very diminutive, as compared to the sound side.]

On Jan. 11, 1851, the boy was brought into the operating theatre, Mr. Bowman having resolved to cut down upon the fragments, and bring the ends of the bones in apposition after removing a portion of their extremities, reserving to himself the faculty of amputating the limb if this could not be effected.

Mr. Bowman began by dividing the tendo-Achillis by a subcutaneous section; he then exposed the extremities of the tibia and fibula by separate longitudinal incisions, so as to avoid injuring the extensor tendons, dissecting close to the bones all the way, that no more bleeding than necessary should be occasioned, and for the purpose of saving the soft parts. Mr. Bowman then removed an inch and a half of the upper and an inch of the lower fragments, and brought the parts together, reducing the limb to a position as nearly straight as possible. Some superfluous integument remained, but it was thought that this would most probably be of use in the course of the development of the limb.

The attempt to save the foot being so far satisfactory, Mr. Bowman abandoned the idea of amputation. During the latter part of the operation the boy was a little faint, but he soon rallied.

The case was treated as a compound fracture, the patient removed to bed, the limb placed in a pair of splints, and slung in a cradle. For the first four days the patient experienced a good deal of pain, was restless and feverish; but on the fifth he slept well, and was much better, as the new fracture-box had been substituted for the cradle, and padded with sand cushions. As the limb lay in the box, it was nearly four inches shorter than its fellow

On the seventeenth day the wound over the tibia was nearly closed, and the other filled with healthy granulations. Mr. Bowman now flexed the foot a little more on the leg, in order to bring the fractured portions into more complete apposition. On the twenty-fifth day the fracture-box was changed for Liston's splint, altered to suit the case; a padded wooden splint was placed within it on the inner side of the leg, and the bandage carried up to the thigh, leaving a space to dress the wound over the fibula, which was not entirely healed.

Nothing worthy of note took place until the beginning of April, about three months after the operation, when the callus being found only partial, and bony union not having taken place, the boy was allowed to hobble about the ward on crutches, the leg being encased in a starch bandage. This, however, did not excite any increased action in the parts. At the end of April, the patient begged to go home, and was accordingly discharged.

In June, 1851, two months after his discharge, the boy was re admitted; he had been ill fed and neglected at home, and permitted to go about without his crutch. The consequence was, that the little callus which had been thrown out was broken down, and the skin over the old wound had given way.

Mr. Bowman finding that the patient was willing to undergo another trial to save the leg, determined to perform the operation recommended by Dieffenbach. On the 12th July the patient was placed on the operating-table, and put under the influence of chloroform. Mr. Bowman made an incision, two-thirds of an inch in length, over the upper fragment of the tibia, close to its extremity, and on its anterior and outer aspect. As soon as the bone was exposed, he applied to it the Archimedean drill, and penetrated into the cancellated structure of the bone. A small ivory peg, half an inch long, which exactly fitted the orifice made, was then introduced into it, and driven in with the hammer. Another incision was then made on a level with the former, over the inner aspect of the same upper fragment, and two others over the lower fragment, and pegs introduced in the same manner as had been done for the first. The fibula was left untouched. The lower fragment was so soft that a needle could be pushed into it, so that the pegs introduced into that part required no force.

Sept. 12th (two months after the operation).—The first peg came away to-day; it is considerably eroded, but whether the bony matter has been absorbed, or whether it has been softened and come away in the pus is uncertain. The second peg was found loosened, but not quite fit to be taken out. Four days after this, Mr. Bowman removed the second peg and a small piece of sequestrum; the other two pegs remain in the bone, and the wounds are healed over. From the softness of the lower fragment in which the pegs are retained, it is to be supposed that the ivory may have been completely incorporated in the bone without having perhaps undergone any change.

Nov. 24th (four months after the introduction of the pegs).—The union of the bones is very incomplete. Mr. Bowman advised the patient to go into the country with a single gutta percha splint and bandage fixing the ununited parts, the knee being flexed at right angles on the thigh; the boy was also desired to wear a wooden leg, so as to give the ankle perfect rest. The further information which has been received tends to show that up to the time at which we write, union had not taken place.

This is altogether an exceptional case—in fact, we are not aware that an attempt was ever made to excite union between fragments which had been lying asunder for thirteen years. It is, however, both satisfactory and instructive to follow the above-described and praiseworthy attempts at saving the boy's foot.

We understand that Mr. Square, of Plymouth, has also tried Dieffenbach's plan, in a case of ununited fracture of the femur; the results were, however, likewise unsuccessful. Pegs were placed in the extremity of the upper as well as the lower fragment, but at the end of three weeks, no attempt at union could be perceived. The thigh was subsequently amputated.

[Mr. Fergusson has also very lately resorted to Dieffenbach's operation for promoting union, as related in the following case:

Case 3. A. B., aged 30, was admitted on July, 3rd, 1852, for an ununited fracture of the ulna. The accident was produced thirteen months before, by his arm being twisted several times round by a machinery belt, producing a comminuted fracture of both radius and ulna. Only active measures, in such a case as this, could give any chance of success.]

The patient was therefore brought into the operating-theatre on the 10th July, 1852, and narcotized with chloroform. Mr. Fergusson commenced by making a longitudinal incision behind the ulnar artery, about midway between the elbow and wrist. When by a careful dissection the bones were fully exposed, it was still somewhat difficult to distinguish the seat of the ununited fracture; but by causing the upper and lower portion of the ulna to move upon one another, it was found that the extremities of the fragments were situated in the wound just made, and surrounded by a fibrous capsule. Mr. Fergusson now passed his knife through this capsule, and proceeded to implant, with the hammer, between the ends of the fragments, a peg made of bone, about two inches long, and tapering to a fine point, having first made a hole for its reception with a common gimlet. Another hole was now made, about half an inch from the end of the upper fragment, with the same gimlet, and a second peg (ivory), of an almost cylindrical shape, introduced. A third peg, (ivory), was placed in the same manner into the extremity of the lower fragment. The heads of the two latter pegs were cut off with the bone forceps, and the wound closed with two sutures.

Mr. Fergusson remarked, after the patient was removed, that there had been some difficulty as to finding the actual locality of the false joint; but that with the impression that the ulna was mainly concerned, he had made the incision which had exactly exposed the injured parts. Some surgeons might have thought the passing of the knife through the adventitious capsule sufficient for the purpose of exciting inflammation; and others might have been tempted to use a seton; but he (Mr. Fergusson) had preferred introducing a foreign substance *into* the bone in the vicinity of the fracture. He had employed the simple gimlet, which answered well; Mr. Bowman had, in a similar case, used a more complicated instrument, the Archimedean drill.

Mr. Fergusson added, that the practice he had just followed was well known to have originated, a few years ago, with Dieffenbach; he was, however, bound to state, that this method had been partially carried out several years ago, by Mr. Watson, of Edinburgh. This surgeon was about to pass a seton, in a case of ununited fracture, when he found it impossible to introduce the skein between the fragments, for this is sometimes extremely difficult to accomplish. Under these circumstances, Mr. Watson thrust a silver probe between the ends of the broken bones, left it, and obtained union. It might now be asked, continued Mr. Fergusson, whether the incision or the silver probe led to the eventual consolidation. He was, at all events, far from wishing to diminish Dieffenbach's merit in suggesting the operation. In fact, it is the duty of the surgeon, in cases which present difficulty, to devise all kinds of plans, which should, however, be based upon sound reasoning. As for himself, he was uncertain, before the operation, regarding the actual mode of procedure he would follow.

Perhaps it might have sufficed to remove the ends of the fragments with the saw, with such a one, for instance, as had been invented by Mr. May, of Reading. This saw was a very ingenious but complicated contrivance, and he (Mr. Fergusson) would prefer the simple straight saw, which had the merit of acting well, and of being very cheap as compared with the circular instrument. The patient just operated upon had very good chance of obtaining union, and he (Mr. Fergusson) had very fair hopes of the case.

The man has since progressed extremely well, and the wound took on a very healthy action. About a fortnight after the operation one of the pegs became loose, and Mr. Fergusson extracted it; and one week afterwards it was found, on the bones being tried, that consolidation was already to a great degree established. It is very probable that in a short time satisfactory union will have taken place.

This case is certainly very encouraging, and well calculated to bring the *pegs* into favour. They are perhaps more useful in ununited fracture of the forearm or tibia than with the femur or humerus.

[The following case is related by DR. GEOGHEGAN, of the City of Dublin Hospital.

Case 4. Four years previous to admission, the patient, a young man, had suffered a compound fracture of both bones of the forearm. The fracture was very oblique, and situated at the lower third of the forearm.]

Dr. Geoghegan had first recourse to the method of pressure, as recommended by Amesbury, and subsequently to the seton, but without advantage. It was now resolved to try Dieffenbach's plan, and Dr. Geoghegan cut down (by small incisions) on points corresponding to the middle of the fracture tract of each bone. He then bored a hole, traversing obliquely the line of apposition of the fragments, and penetrating as nearly as possible the entire thickness of the latter, and introduced ivory pegs. A good deal of inflammation and suppuration resulted from these proceedings; and Dr. Geoghegan was obliged from the intensity of these events, to remove the pegs on the ninth day after the operation. Considerable thickening about the fragments, and, as a consequence, great diminution of mobility, ensued. This was, however, not the thickening of real callus, but merely albuminous effusion, which latter was gradually absorbed, and matters remained in their former state.

When the parts have become quiescent, Dr. Geoghegan resolved to afford the patient a further chance. He practised again a small incision over the fracture tract for each bone, introduced a narrow chisel upwards and downwards, and detached and broke up, as far as practicable, the ligamentous connexion of the fragments. Dr. Geoghegan strongly scraped, at the same time, the opposite faces of the latter, so as to expose *a fresh osseous surface*, and open the Haversian canals. This operation, which was subsequently repeated, produced the second time much inflammation, but no *final* benefit.

Now came the question of excision; but Dr. Geoghegan did not propose this formidable procedure, owing to the anatomical relations of the bones and muscles of the forearm, and the indifferent success which has attended the method of excision, (notwithstanding the statements of some of its advocates.)

The patient has since worn a gutta percha case, and was recommended by Dr. Geoghegan to try the "stimulus of necessity," and use his hand as much as possible. The result of this has yet to be learned.

Dr. Geoghegan has known a case in which the latter method succeeded (aided by restrained motion of the fragments) in the lower extremity, after other means had failed. We should not omit to mention that Dr. Geoghegan's patient, while under treatment on Amesbury's plan, was also, at the suggestion of Dr. Cusack and others, subjected to the action of mercury.

It becomes evident from the preceding cases that Dieffenbach's method is worthy of every consideration, and that it offers a very fair chance of success in cases of ununited fracture; but this method shares the common fate, and may, though carried out with great skill and perseverance, fail to accomplish its object. Some surgeons, however, doubt its powers completely, and attribute the occasional favourable results obtained by Dieffenbach's plan to the perfect rest which is combined with the use of the pegs.

Mr. Syme, for instance, says, in his clinical remarks: – "I was able to say, that in the course of twenty-five year's practice, I had always succeeded in restoring firmness by attention to the insurance of stability in the position of the limb; and I expressed a strong impression, almost amounting to conviction, that various means of remedy, such as setons, subcutaneous division, ivory pegs, &c., owed any share of the credit which they had acquired to the care conjoined with their employment to keep the bones quiet."

We may here mention a case of ununited fracture of the tibia, which was some time ago under the care of Mr. Dixon, at St. Thomas's Hospital. The fracture had remained ununited for a whole twelvemonth, when Mr. Dixon made powerful extension of the limb, upon which something was heard to crack. The leg was cased in gutta percha, and union eventually took place. Now it was suggested that if ivory pegs had here been used, they might perhaps have obtained more credit than they really were entitled to. In fact, a change of action, by whatever means, may sometimes produce union.

Mr. Poland had at Guy's Hospital a young woman, about twenty-four years old, under his care, with ununited fracture of the femur. He gave her good food and plenty of vegetables, made her walk about, cased the limb in a starch bandage, and at last obtained union.

It is extremely probable that one of the most frequent causes of non-union in fracture is an imperfect apposition of the ends of the fragments, or an interposition of muscular tissue. Incomplete adaptation has to all appearance a great share in results of this kind, and this circumstance should stimulate surgeons to pay especial attention to the setting of fractures, and to satisfy themselves, by an almost daily inspection, that the parts are actually and truly remaining in the position first obtained.

When it is considered that the usual evacuations necessitate an unavoidable amount of disturbance of the whole frame, and that these are very frequently repeated, it is surprising, as far as the femur and the bones of the leg are concerned, that ununited fractures are not more frequently met with. All patients with fractured femur should be placed on those beds which allow of all the functions being performed without the slightest shifting. It has also being suggested that a latent syphilitic taint is perhaps more frequently connected with the occurrence of non-union than is generally supposed.

We shall not omit to quote the excellent results which Dr. Valentine Mott, of New York, obtained by means of the seton. ('Transactions of the New York Academy of Medicine,' analysed in 'British and Foreign Medico-Chirurgical Review, July, 1852.') Dr. Mott gives nine cases of success by using the seton in cases of ununited fracture. He also relates the case of a boy, twelve years of age, with whom the seton failed in an ununited fracture of the humerus, (1826). "The ends of the fragments were then sawn off, and a silver wire pased through each, twisted, and brought out externally through a canula. The wire cut out from one of the bones in a few days, and the other was soon after removed. No great inflammation followed, and in a few weeks consolidation was complete. Dr. Mott calls these "wire sutures," and the writer in the 'British and Foreign Medico-Chirurgical Review' remarks, "The 'wire suture' was thus employed several years prior to its adoption by Flaubert, of Rouen, to whom Malgaigne attributes its origin."

Ununited fracture, and the use of the pegs, are subjects of so much importance, that we have not hesitated to group together the preceding cases, under the impression that the collection of these nosocomial facts may prove of practical utility.—*Lancet, Aug.* 14, 1852, *p.* 152.

67.—ON COMPOUND FRACTURES

By G. J. Guthrie, Esq.

§ A fracture of a bone, however *simple* it may be in its nature, is said to be *compound* when accompanied by an external opening in, or a wound of, the soft parts, communicating with the broken bone—a complication which usually gives rise to ulcerative inflammation and suppuration throughout the whole extent of the injury, preventing thereby those milder processes being effected which, under the more favourable circumstance of the skin being unbroken, lead to a speedy union of the broken parts; whence the desire manifested by the surgeon, in ordinary cases of compound fracture, to close the external wound, if possible, but which, from the nature of a gun-shot wound, it is useless to attempt. A fracture is said to be *comminuted* when the bone is crushed, as by a heavy wheel passing over it. It may still, however, be a *simple* fracture, or without an external wound; and is, in that state, much less dangerous than a similar injury accompanied by an external opening, however small, the edges of which cannot be immediately and permanently reunited.

§ An arm or a leg, as a general rule, is not to be amputated in the first instance, for a compound or gun-shot fracture. An effort should always be made to save it; and, under reasonable circumstances with regard to the extent of injury, the comfort, climate, and ordinary good health of the sufferer, the object will usually be obtained, under good surgical treatment.

§ It is not so with the thigh. After the battle of Toulouse, forty-three of the best of the fractures of the thigh were attempted to be saved under my direction, and even selection. Of this number, thirteen died; twelve were amputated at the secondary period, of whom seven died; and eighteen retained their limbs. Of these eighteen, the state three months after the battle was: five only can be considered well, or as using their limbs; two more think their limbs more valuable, although not very serviceable, than a wooden leg; and the remaining eleven wish they had suffered amputation at first. Of the officers with fracture of the femur, one, having been taken prisoner during the action, died under the care of the French surgeons, by whom he was skilfully treated; the other has preserved a limb, which he rather wishes had been exchanged for a wooden leg.

In the five successful cases, the injury was in all at or below the middle of the thigh. In the thirteen others who retained their limbs, the injury was not above the middle third; and of those who died unamputated, several were near or in the upper third, and either died before the proper period for secondary amputation, or were not ultimately in a state to undergo that operation. Of the seven amputations which died, two were at the little trochanter, by the flap operation; and the others were for the most part unfavourable cases. In one case only was the head or neck of the bone fractured. This man lived for two months, and, from the dreadful sufferings he endured, it was much regretted that he had not lost his limb at the hip-joint at first. The operation ought, however, to have been the removal of the head and neck of the bone; but he was not seen in time by those who could or would have done this operation, which was then, however, only contemplated for the first time.

Nearly all the wounded, after this battle, had every possible assistance and comfort, from the second day after the action. The hospitals were well supplied with bedsteads—no inconsiderable point in the treatment of fractures, and several of the surgeons had been in almost every battle from the commencement of the war. The medicines and materials for their treatment were in profusion. The sick and wounded (1359 in number, including 117 officers) were in charge of two deputy inspectors-general, ten staff-surgeons, six apothecaries, and fifty-one assistant surgeons; and the whole worked from morning until evening with the greatest assiduity. The surgery of the British army was at the highest point of perfection it attained during the war; and this enumeration is given to show the number of medical men required under the most favourable circumstances for 1500 wounded men, if they are to have all the aid surgery can give them. Doctors are not the most ornamental part of an army, but there are days in a campaign when many poor fellows find them the most useful.

Every broken thigh or leg was in the straight position, and the success was greater than on any previous occasion. Nevertheless, with all these advantages, there can be little doubt that if amputation had been performed, in the first instance, on the thirty-six out of the forty-three who died or only partially recovered, some twenty would have survived, able, for the most part, to support themselves with a moderate pension, instead of there being perhaps five, or at most ten, nearly unable to do anything for themselves. The Baron Larrey, with the *élite* of the military surgeons of France, as well as those of Germany, have maintained this opinion; and in the present state of our knowledge, it is perhaps the safest practice, particularly under doubtful circumstances, in which it cannot be ascertained whether rest, the best surgical care, and comfort may not be wanting, without all which a favourable result cannot be expected.

§ The peculiar difficulty in treating a gun-shot fracture takes place when the bone is splintered for some distance, as well as broken. In these cases, inflammation occurs internally in the membranous covering of the cancellated structure of the bone, which ends in the death of the parts affected; whilst the periosteum takes on that peculiar action externally, which ends in the deposition of ossific matter around the splinters which have lost their life, and are enveloped by it. The bony matter at first small in quantity, is gradually augmented, and deposited for some distance in the surrounding parts, so that it has been known to include the

the neighbouring vessels and nerves in less than twenty days; and at the end of a few weeks the quantity of ossific deposit is often very remarkable. Each splinter of bone becomes the sequestrum of a necrosis, in a similar manner as it is known to occur in the bones of young persons spontaneously affected by this disease, with this essential difference, that in the idiopathic disease there is only *one*, as if worm-eaten, sequestrum, perhaps the length of the shaft of the bone, and easily removable by one operation, whilst there may be in the traumatic disease several dead centres of dead deposit, each of which requires to be removed by an operation to effect a cure. This new bony deposit will often be half an inch and more in thickness, and at a late period is as hard as the old bone. The repetition of operations required in such cases is very distressing, particularly in the thigh, in which the disease often continues for months, and even years.

§ A musket-ball will often lodge in the less dense parts of bones, such as the great trochanter and condyles of the femur, without fracturing the bone; it will sometimes even pass through the femur above and between the condyles, merely splitting, but without separating the bone in parts or pieces. Balls sometimes lodge in the shaft of the femur, without breaking it, and frequently do so in the tibia, the humerus, the bones of the cranium, and even in others of less size. Balls thus lodged will sometimes remain for years --nay, during a long life, without causing much inconvenience. It is, however, generally the reverse, and they are often the cause of so much irritation and distress, that the sufferers are willing to have them, and even their limbs, removed at last, at any risk.

Whenever, then, a ball can be felt sticking in a bone, although it cannot be brought into sight, it should, if possible, be dislodged and removed, by the trephine, by small chisels, by small strong-pointed curved elevators, or by any of the screws invented for the purpose, which have sometimes been found efficient. An apparently useful instrument of this kind is attached to the forceps for extracting balls, more used in France than in England. When the ball can be seen as well as felt, the surgeon must be guided by his own experience and judgment with respect to the most fitting instruments. It is to be removed, if possible, whatever may be the means used for its abduction, after the wound has been properly enlarged for the purpose.

§ When a ball merely grazes a bone without breaking it, and passes through the limb, and no splinters can be felt by the finger, dilatation is unnecessary in the first instance; although some small splinters may be cast off subsequently, or a layer of bone may exfoliate, requiring assistance for their removal.

The bone may be fractured in a case of this kind transversely, and will require only the simplest treatment in an almost similar manner.

§ If the ball should enter and be flattened against the bone without breaking it, and lodge against it or in the soft parts, it should be sought for and removed. When the ball is flattened and the bone broken, it may lie between the broken extremities, and even lodge in one of them, rendering the case more complicated, and the necessity for close investigation more urgent.

§ When a ball strikes the shaft of a bone, such as the femur, directly and with force, it shatters it often in large, long, and pointed pieces, retaining their attachment to the muscles inserted into them. A fracture of this nature in the middle of the thigh will often extend downwards into the condyles, and as high as, although rarely into the trochanters. These are cases for immediate amputation.

§ Gun-shot fractures of the head and neck of the femur have been hitherto fatal injuries, unless the whole extremity has been removed. It is hoped death may be prevented without this most formidable operation, by the removal of the head and neck of the bone. If the upper third of the femur, below the trochanter, is badly fractured, and an attempt is made to save the limb, death generally occurs after several weeks of intense suffering. Few escape with a useful limb, which had been badly fractured in the middle part, their strength and health being destroyed by the pain, suppuration, and constitutional irritation which ensue.

The least dangerous and the most likely to be saved, are fractures of the lower third, or at most the lower half of the thigh, and when they do not communicate with the knee-joint an attempt ought always to be made to save them.

§ The preservation of a fractured femur from a musket-ball, when splintered to any extent, ought only to be attempted if the principal splinters can be removed. When the splinters of the femur are long and large, it has been supposed that if they retain their attachments to the soft parts, they may be placed in apposition and preserved. It ought, however, only to be attempted under the most favourable circumstances, and will not often even then succeed. In the humerus it is different. An examination by the finger, in the first instance, is necessary to ascertain the extent of the injury to the bone, and to enable the surgeon to remove the broken portions, as well as the ball or any extraneous substances which may be in the wound. The incisions necessarily required for this purpose in the thigh are sometimes neglected, or the surgeon refrains from making them from the great thickness of the muscular parts, and from the wound having taken place on the inside, near the great vessels, so as to render incisions of sufficient size or extent in some degree dangerous. The thickness of the muscular parts is not a sufficient reason for avoiding an incision, neither is the vicinity of the great vessels and nerves, although they may not be divided; and if the situation of the bone on the outside of the thigh be attended to, the broken portions may sometimes be got at, at that part, if not on the inside. If this cannot be done, amputation had better be had recourse to. The object of the examination of such a wound being to ascertain the state of the fracture and to remove the splinters and any extraneous substances, the extent and number of the incisions must depend on them; the true principle of what has been called dilatation in wounds. If the ball should have merely struck and grazed the bone, and passed out, causing a transvere fracture only, there is no necessity for making incisions at the moment, although one or more may be subsequently required to aid in the discharge of an exfoliated piece of bone, or of a splinter which may have been overlooked. If the ball lodge deeply in the soft parts, after breaking the bone, it should be removed, if practicable, by a second or counter opening, and a free vent should always be made for the discharge. It may be, however, laid down as a general rule, that whatever is likely to be required during the first few days had better be done on the first than on the second or third; for after inflammation has commenced, any handling or examination of the limb, however gently made, gives great pain.

§ After the first incisions have been made, and the larger splinters, which can be felt, have been removed, a secondary danger occurs from those which are smaller, and may have been overlooked, or have not been discovered. This arises from the enveloping of these splinters in the new ossific matter described as being formed by the inflamed periosteum. This evil must be prevented by a careful examination of the wound when suppuration has been fully established, and the sensibility of the parts is in some degree diminished, when, if loose splinters of bone are felt, they ought to be removed by incisions carefully and gently made to the extent which may be required. If this is not done early, the ossific deposit will take place around, and shut them in, even if the wound should close, which it usually will not. Their retention is accompanied by a firm thickening of the part, and in due course of time a spot of inflammation implies the formation of an abscess, and an ulcerated opening through the new bony deposit. When this abscess breaks externally, the probe will pass through the hole in the new bone, and rest on the rough, dead, and now moveable splinter, the extraction of which can alone afford permanent relief. The earlier this is done the softer the ossific matter will be, and which at an early period will cut like Parmesan cheese intermixed with lime. If deferred until the bony matter is quite hard, it must be cut through with the chisel, or bone scissors or forceps, the application of which sometimes requires great force.

§ The position of the patient in a gun-shot fracture of the thigh or leg is of the utmost importance. He should lie on his back, and the limb should be straight. It is almost impossible to keep a man's thigh in the bent position, or on its side, without his turning on his back, and the union of the bone, if it take place at all, must be then at an angle. The bent position forward, or on an inclined plane, is defective, inasmuch as the matter, which must necessarily be secreted in great quantity, will gravitate backwards in spite of every care to prevent it. When a proper bedstead is used, a slightly inclined plane will sometimes be advantageous at a later period, when the body may also be raised, even to the erect position, the principal object being to take off the action of the two muscles inserted into the smaller trochanter, which, with the rotators behind, raise and evert the upper end of the broken bone. This direction outwards, should be met by a similar direction of the lower part of the bone, and by the application, from time to time, of a proper splint, compress, and bandage, on the elevated bone, if they can be borne with perfect ease.

§ Splints are of various kinds, and made of different substances. The discovery of gutta percha has enabled some to be made of that substance, which, when moulded into sheets, of from one to two eighths of an inch in thickness, can be rendered soft and pliable by the application of hot water, regaining its firmness as it dries. Splints can thus be made of any size or length, and of any form, with apertures, if necessary, for the passage of the discharge from the wounds. Leather tanned without oil, and called splint-leather, is equally useful, and if, when dried, the splints thus made become too hard, and press unequally, they can be softened by hot water, and removed and replaced with little comparative inconvenience.

One wooden splint of more than the length of the limb, and somewhat similar to that called Desault's, is absolutely necessary for the thigh, if it can be borne, as a means of extension, or rather of preserving length. A shorter one on the inside, and one behind, will sometimes be required to complete the set. A short one may be wanting for occasional use in front.

§ The bones of the leg being more exposed, admit of greater liberties being taken with them, and of larger portions, or even parts, being taken away successfully, than ought to be attempted in the thigh. A leg should therefore be rarely amputated for a fracture from a musket-ball. The splinters should be removed to almost any extent and number, and irregular portions sawn off, even if both ends should be thus implicated. If one bone of the leg remains uninjured, the case becomes comparatively simple. The position should be straight on the heel, as a general rule, admitting of few exceptions.

§ The best apparatus for a compound fracture of the leg in either civil or military surgery, and particularly in the latter, is that contrived by Mr. Luke, which may be seen in use at the London Hospital, and is supplied by Mr. McLellan, 3, Turner-street, Whitechapel-road. It is a simple iron cradle of small size, such as is used to guard a limb from the weight of the bed-clothes, composed of three bars or large segments of a circle, united at their middles and ends or sides as all cradles are, by a bar of iron of equal thickness. This is placed on a board a little wider than itself, with a ledge or bar at each side to prevent the cradle from moving, which is aided by two buttons or little pieces of wood on each side, which being moveable, turn over the iron bars, and thus render the board and cradle one firm piece. In this the leg is to be slung, to the centre bar above, by ordinary tapes. A splint made of copper, to prevent rust or injury, hollowed to receive the leg, extending beyond the foot with a foot-board, and beyond the condyles of the femur above, enables the tapes to be passed under the limb for slinging it; whilst from the extension of the splint beyond the condyles, it causes the leg and thigh to move together, in a manner which will often prevent the pain which follows a sudden motion of the patient. Solid wooden side splints are still wanting, and these should have holes cut in them to allow vent for the discharge and for the application of the dressings; or if a portion of the splint, say the middle, should require removal altogether for this purpose, the upper and lower parts may be united by a semicircular bar of iron, at the pleasure of the surgeon, within which the dressings may be applied, and by which the splint is rendered firm. When the leg is thus slung, the knee is somewhat bent, the thigh is raised, the muscles of the leg behind are relaxed, and the patient can be moved with much greater facility than with any other apparatus; one great advantage of this apparatus is, that it can be used with effect even if the patient is obliged to lie on the ground. It admits of being slung as a whole in a spring cart, by additional but strong elastic straps fastened to, or applied on the under part of the board, and thus a double slinging motion may be obtained, when the sufferer is obliged to be moved.

These splints are so portable that they may be carried into the field or upon the deck of a ship, to bring the patient to the surgeon.

§ The *arm*, when fractured by musket-shot, admits even of more strenuous efforts being made to save it; and from its smaller size, and the more ready exposure of the bone or bones when badly broken, the danger is less. If an artery should yield by ulceration, it should be laid bare by operation, and a ligature placed on each bleeding end. An additional or second wound in the fore-arm only complicates the case, and the loss of a finger or two does not augment the danger. In fact, amputation should rarely take place in the first instance; and only in the second when mortification has commenced, or the strength and health of the patient will no longer bear the drain upon them. A great advantage is derived from the facility with which the upper extremity can be supported, when compared with the lower, and the aid to the general health which may be obtained from the locomotion sufferers with broken arms are capable of undergoing.

§ In making incisions for the removal of splinters of bone, both at an early and at a late period, and particularly in the latter, when the soft parts are all impacted together, and *nothing is gained beyond what is cut*, the course of the trunks of nerves, as well as of the great arteries, should be carefully attended to, and these parts avoided; for a successful cure of the fracture will be much deteriorated in value, if accompanied by a loss of motion and sensation in the hand or fingers.

§ Splints for the arm should be made of solid materials, although light; some a little hollowed, and at a right angle, to correspond with the bend of the arm, and to admit of a little motion of the radius and of the fore-arm and hand, which relieves the position, is more comfortable for the sufferer, and tends to prevent stiffness of the elbow. The pads or lining for the splints should be made of cleaned or carded wool, rather than of tow or old linen, protected by some one or other of the modern modifications of caoutchouc.—*Lancet, Aug.* 28, 1852, *p.* 188.

68.—ON FRACTURED RIBS CONNECTED WITH EMPHYSEMA.

By John Hilton, Esq., F.R.S.

[The following case is a good example of this complication. Mary Ann H., 25 years old, in a quarrel with her husband was severely beaten by him with a poker about the left side. On admission, fractures of the fifth, sixth, seventh, and eighth ribs were detected, with a considerable amount of subcutaneous emphysema; there was intense pain at each inspiration, and she was distressed by a severe cough. Her side was tightly strapped. Twenty minims each of antimonial wine and tincture of henbane were ordered to be taken in a mixture with acetate of ammonia every four hours. Rapid improvement immediately took place, so that on the fifth day she left the hospital at her own request. Mr. Hilton remarks:]

You will observe this case presents one special and distinct feature—viz., the emphysema supervening upon the fractured ribs, and that is the reason for my adducing it. The latter injury was inflicted by direct violence; it is very probable, or almost certain, that the instrument used by the husband (the poker) drove the fractured ends of the ribs inwards and that one or more of these wounded the lung; but the elasticity with which the ribs are endowed enabled them to resume their original position,—to rebound in some degree from the lung, and leave an aperture through which the air escaped into the external areolar tissue, thus producing the emphysema.

But in considering these pathological phenomena, it may be asked why the air did not escape into the pleural cavity? But before discussing this point, just cast a glance on this diagram; it represents a transverse section of the chest; it brings to your recollection that the œsophagus, pneumogastric nerves, thoracic duct, aorta, &c., surrounded by areolar tissue, occupy the posterior mediastinum; and it well shows in how close a contact are the pleuræ pulmonalis and costalis, merely, at most, a synovia-like fluid intervening. Now, you see, that after wounds of the lung, there is nothing to prevent the air passing into the cavity of the pleura, and you will understand how it may, by its accumulation there, cause the lung to be compressed towards the spine and median line of the chest. But you have heard, amongst the circumstances of the case, that the patient is a drunkard, and you are aware that with such people pleural adhesions, as the result of pleurisy, are very frequent. This woman was probably so situated; the adhesions between the pleuræ, closing the interpleural space, prevented the air from passing into the otherwise cavity of the pleura, (where it would have caused much distress of breathing and danger), and compelled it to go direct into the subcutaneous areolar tissue. I think I may say, that in this patient the habits of intemperance, though very baneful in the end, had, under these circumstances, so far an advantageous and a beneficent effect.

From the account of the case, we learn that the patient's chest was strapped in the manner I have described before; my object here was to prevent the external and internal parts from moving upon each other. Without going into a detail of the direction of the movements of an expanding lung, I may say in general terms the lungs expand during inspiration from their own centre, whilst the costal parietes of the chest, having their fixed points above and posteriorly, move upwards and outwards. These parts, with their pleural surfaces, therefore, do not move in the same direction. Hence a tendency of the apertures in the pleura pulmonalis and pleura costalis to lose their relative position of directly opposite each other, as they were at the moment of the accident, and a danger of the air passing from the lung into the cavity of the pleura. The strapping was then applied, in order to keep all the points of the thoracic parietes and lung exactly opposite each other, or as nearly so as possible, and the two apertures just mentioned in direct communication. An important point to notice is this: by means of perfect quiet, the wound of the lung is extremely likely to be sealed up with lymph in the space of twenty-four hours, but such would not be the case if free and tumultuous movements were permitted.

Allow me now to make a few general remarks on emphysema. What is meant by this term ? It might be called an escape of air within the economy, in varying directions, according to the circumstances of the case. Now, as to emphysema as connected with fractured ribs, you must observe, that when the fracture is not associated with an external wound, it may at once be inferred that the air which is escaping into the areolar tissue must have been freed by a wound of the lung. When, however, an external wound does exist, and the emphysema is limited and stationary, such diffusion of air may have been caused by its admission through the external wound. Indeed, I have seen a limited emphysema occur in cases of compound fractures of other bones besides the ribs, as of the skull, the thigh, leg, and lower jaw. When the skull is broken and emphysema is produced, there is generally a wound of the frontal bone, implicating the frontal sinus, and the air passes under the occipito-frontalis muscles. Thus, in fractured ribs, with emphysema, we might suppose the lung uninjured if there be a wound of the skin; but if there be no such external wound it is certain that the lung has suffered perforation.

But besides these circumstances, you should bear in mind that areolar emphysema may occur from without, independently of broken ribs, by an external perforation of the skin. Again, emphysema may occur from within, independently of broken ribs, by a rupture of the lung. In such a case, the course of the air will be determined by the giving way or not of the pleura pulmonalis. If the latter be ruptured, the air will of course escape into the pleural cavity, causing great distress of breathing by compressing the lung, though old pleuritic adhesions may limit the diffusion of the air, and considerably diminish the distress. If the pleura pulmonalis be not ruptured, then the course taken by the ir will be very peculiar; it may come to occupy the anterior and posterior mediastina, and even raise the pleura from off the diaphragm.

I will just adduce the case of a boy in whom such a lesion took place; you will find it extremely instructive. The patient was about eleven years of age, and had the misfortune of being run over a short time before he was brought to the hospital. The vehicle had passed over his chest, and when admitted he was under the influence of a severe shock. The whole frame was cold, the boy was very low, and he could not swallow. There was no external wound whatever, but the whole of neck and the face were emphysematous, and he was in the greatest possible distress in his breathing. When touching the radial artery, crepitation could be felt, the latter being of a deep kind, and appearing to accompany the artery only. It was, in fact, extremely likely that the air had crept down the sheath of that vessel, and had, according to all appearance, diffused itself with the arterial system of tubes, rendering the pulse so extremely feeble.

The boy was put to bed, and stimulants were given him. I at the same time made incisions into the neck, in order to free the accumulated air, and this measure seemed to give the boy great relief. The emphysema gradually went off, and the patient was progressing very favourably, when, after about ten days, he imprudently exposed himself to cold, was attacked with pneumonia, and died. On examination, no fractured ribs were found, although carefully sought for, and the fearful emphysema which had ensued upon the accident must have arisen from a rupture of a certain number of pulmonary cells, without associated broken ribs.

You will see how obscure the full comprehension of such cases must naturally be; and as it is important that you should be able to form a tolerable diagnosis of such cases, I will bring another before you, replete with interest and instruction, and which will fully exemplify the extraordinary course of the air when it escapes from the air-cells, but with an unbroken pleura pulmonalis.

The case refers to a private patient of mine, who was formerly a pupil here. He was about twenty-six years of age, and suffering from phthisis, and had been ill during several months. One evening while straining at the water-closet, he felt something suddenly give way between his shoulders; he was then attacked with dyspnœa and difficulty of swallowing. The distress in breathing and difficulty in swallowing increased rapidly, and I was hastily sent for about four or five hours after he had felt something give way in his back. I found him sitting up in bed, supported by pillows; his breathing most difficult and gasping; pulse small, and very weak; hands and feet, nose, ears, and lips, cold and congested; pain in his back; his voice feeble, and incapable of speaking a long sentence, so small was the quantity of expired air; any such attempt at speaking augmented his distress; he was therefore directed not to say a word, but to write his wishes. The crepitation of emphysema was felt throughout the whole of his neck, extending amongst the deep structures under the deep fascia, making his neck thick and large, and rendering the larynx and trachea almost fixed. The air occupied to distension all the sub-fascial space reaching to the temporal fossa, and producing a bulging of the temporal aponeuroses. The air occupied the neighbourhood of the clavicles and the axillæ, but had not been diffused, either superficially or deeply, beyond this in the upper extremities, excepting in the course of the brachial artery, and its divisions into the ulnar and radial arteries; along the tracks of these blood-vessels the minute crackling of extravasated air could be distinctly recognised on pressure by the finger; no other emphysema existed at that time below the shoulder. The exterior of the chest under and about the pectoral muscles was occupied with air. But even with this extent of emphysema was a disproportionate shortness of breath. Ether and ammonia were administered in small quantities; for only a little could be swallowed at a time, and that with difficulty. His dyspnœa proceeding, and his life in immediate danger from suffocation, I made a free, clean, and direct incision nearly an inch in length on each side through the cervical fascia, at the posterior margin of the sterno-cleido-mastoideus; the air came puffing out of the incisions. This escape of air or removal of pres sure gave him some temporary relief; subsequently, other incisions were required, and always afforded some benefit to the patient's condition. Notwithstanding all such efforts, and the effects of the administration of stimulant medicines, the dyspnœa continued, and so did the difficulty of deglutition; indeed, after a few hours from my first seeing him the attempt to swallow was dispensed with, and enemata, both stimulating and nutritious, were frequently administered, but without permanent effect, and he died on the second day after this attack, Oct. 13, 1845.

I will now trouble you with a detailed account of the post-mortem examination, which took place forty-eight hours after death. There was very little evidence of putrefaction; none was noticed, except at the posterior part of the body, the result of gravitation. The emphysematous state of the areolar tissue extended from the neck, which was very full of air, into the face, puffing the cheeks, and rendering them white from distension. There was also air diffused throughout the back, chiefly, however, on the right side; and the parietes of the thorax were everywhere emphysematous. Neither the right nor the left leg was affected; but the parietes of the abdomen, superficially to the muscles, were slightly emphysematous. There was no emphysema in the muscular layers forming the walls of the abdomen; but the interposed areolar tissue of the thoracic muscles was occupied by air.—Cavity of the abdomen: no air behind the peritoneum, nor any fluid in that cavity; liver large and coarse; bile pale; gall-bladder small; spleen natural; kidneys large and coarse, the cortical structure becoming white with deposit; bladder small and empty; stomach and intestines free from disease. On raising the sternum, the areolar tissue of the anterior mediastinum was found occupied by air, distending it. The whole track of the phrenic nerves was occupied by air, distending the areolar tissues immediately surrounding them. This emphysema, following the defined course of the phrenic nerves, reached to the diaphragm, and had separated the pleura from that muscle to the extent of two or three square inches on the left side, and to a less extent on the right side.

I will just make a short pause here, to remind you that the phrenic nerves, at the upper part of the chest, enter and then pass through a sort of fibrous tube between the pleura and pericardium; air had penetrated this tube, and had, by compression of the nerve, rendered respiration so difficult. Along this phrenic nerve the air had then descended to the diaphragm, where it acted with such force as to raise the pleura lining the muscle. You may imagine, from the consideration of the latter fact, how much pressure must have been exercised on the phrenic nerve, for the connexion between the pleura and convex surface of the diaphragm is very firm, and great force is of course required to raise the one from the other. But the diffusion was very extensive; the posterior portion of the sub-pleural space between the ribs and the spine, and the posterior mediastinum, were quite full of air.

No air had penetrated into either pleura, nor into the pericardium, the latter being occupied by about an ounce of fluid, slightly tinged with blood. Heart large; left ventricle slightly hypertrophied; mitral valve decidedly contracted and thickened; aortic valves thickened, and somewhat rigid; some opaque deposits, about the size of pins' heads, were observed in small groups under the lining membrane of the ascending aorta, a little below the origin of the arteria innominata, and opposite to the aortic opening. The blood was black, and feebly coagulated—firmer, however, on the right side than on the left. No air had passed through the pleura or pericardium; no exosmosis or endosmosis of air.

The left pleura was free from adhesions, except towards the apex on the posterior part, where old ones were found; the rest was free. No effusion of fluid was noticed. On raising the left lung, the left serous wall of the posterior mediastinum was seen projecting outwards towards the lung, being forced into that direction by great distension of air. Near the mediastinum the pleura costalis was, in various places, raised from the ribs by air, and the same thing had occurred slightly where the pleura passes from the sternum over the cartilages of the ribs.

There existed strong adhesions opposite the middle of the convex surface of the right lung and the fifth rib; and around the base of the pulmonary end of this adhesion the pleura pulmonalis was thickened, opaque, and somewhat contracted for about two inches square. Under this was subsequently found a cavity, which might have lodged a pigeon's egg, lined by a well-marked opaque membrane.

Extensive adhesions of the right pleura were noticed near the apex of the lung, towards the median line, reaching along the concave surface of the lung to near the entrance of the right bronchus into the lung. The rest of the pleura was free from adhesions.

It was now important to discover the sources of the extravasated air and its point of escape from the lungs. After very careful inflation of these organs in situ, it was ascertained that the air had escaped from a cavity covered by the above-mentioned adhesions, just over, and communicating with, the right bronchus. The air issued at two points, one through the wall of the cavity direct into the posterior mediastinum; the other outlet took a course under the pleura pulmonalis to the point of entrance of the bronchus into the lung, raising the pleura pulmonalis from the lung, and thence proceeding into the posterior mediastinum, the openings being very small. The pulmonary cavity presented cavernous walls, and was occupied, in part, by dark, offensive, and broken-down pulmonary tissue, the result of recent mischief.

Sections of the right lung presented several small cavities in the upper lobes towards the median line. The whole of the lung was filled with small accumulated inflammatory tubercles, in groups about the size of large shot; others as big as peas. Numerous lobules presented the ordinary pneumonic consolidation.

No cavities were found below the upper lobe; the left lung was studded with the same kind of tuberculous deposits, but there were no cavities. Recent pneumonia had occurred here and there in lobules or groups of lobules.

The bronchial glands were enlarged. The larynx and trachea presented nothing remarkable.

This case clearly demonstrates the course of the air when emphysema arises without rupture of the pleura, or when it has entered the posterior mediastinum. It is very probable, that whilst the patient was straining, the air had been forced from the bronchial tube into the cavity adverted to, and thence into the posterior mediastinum. Now, you are all aware that the latter is continuous with the middle mediastinum, which transmits the phrenic nerves, and also with the anterior mediastinum, and that its boundary above is the cervical fascia, which forms a dome over the entrance of the chest. This dome, as you know, is perforated with holes for the passage of vessels and nerves; and it is through these holes, into the sub-fascial spaces, and along the sheaths of the blood-vessels and nerves, that the air passes and diffuses itself, pursuing the course of the blood-vessels, much in advance of the more general diffusion, and so presenting itself, as it were, a pathognomonic or characteristic indication of the escape of the air from the lung into the posterior mediastinum, and distributed therefrom. The air, having escaped from either bronchus or the thoracic portion of the trachea, might produce the same series of symptoms as observed in the case now before your notice. Hence you may derive valuable practical information. When you, for instance, find the neck full and crackling with air, and the large arteries only of the upper limbs surrounded by it, and if there be no external wound and no fractured ribs, the inference must be, that the air has escaped from a bronchus or the trachea, and found its way into the posterior mediastinum. Recollect, then, these points when you come in contact with such a case, so that you may be enabled to form a correct diagnosis.

The peculiar dyspnœa noticed in these cases is owing to the compression, by the air, of the phrenic and eighth pair of nerves; and the difficulty of swallowing arises from the pressure exercised upon the œsophagus by the air diffused through the posterior mediastinum. The air, traversing the limbs, exercises a compression upon their arteries; hence arises an accumulation of blood in the aorta and left side of the heart. And it should, lastly, be observed, that if the air in the posterior mediastinum raises, after great tension, the pleura costalis, then the air reaches the areolar tissue of the exterior of the chest; and finally produces the ordinary external emphysema. When you see these symptoms manifested in a given case, I expect you will have no difficulty in determining the nature of the accident.

But you will do well to remember that these cases of emphysema without fractured ribs are the exceptions; most frequently there is a wound inflicted upon the lung by the ends of fractured ribs, and emphysema, pursuing the ordinary course, thus ensues. You should notice, besides, that a severe blow upon the chest, or other external force acting violently upon it, may, without causing any fracture of ribs, lead to a tearing of the interior of the lung, almost immediately followed by copious bloody expectoration, this symptom not being accompanied by any recognisable emphysema, nor any evidence of broken ribs. Pneumonia may occur under similar circumstances, from the lung being bruised. I was informed by one of the pupils, of the case of a prize-fighter who came to his death in this manner: he received a severe blow upon the chest, which, without breaking any ribs, literally tore the lung; extensive extravasation and spitting of blood immediately followed, and he died in a short time. The post-mortem examination revealed the existence of the lesion which I have just mentioned, and no broken ribs.

But, I repeat it, the most common association of emphysema from external injury, is *fractured ribs* and *perforation* of *both pleuræ and the lung* by the ends of the fractured ribs. It may happen that the latter remain fixed in the lung; the mischief is then of a very severe nature. Or, after having been thrust by external force into the lung, they may resume their position, leaving an opening in the lung through which the air escapes into the pleural cavity; and when an opening has taken place in the pleura costalis, the air may be driven to the exterior of the chest.

As to the course which the air takes, it must naturally be determined by the continuity of the areolar tissue, and the attachments of fasciæ. As to the *extent* of the emphysema, you easily perceive that it will vary in different cases, according to the size of the openings of communication with the lung. In the first case which I this day brought before you, it was reported as considerable, yet in three days it was nearly gone.

This rapidity in the disappearance of emphysema naturally suggests the question as to what becomes of the air thus diffused through the subcutaneous cellular tissue. We find that after a few days the air is absorbed; but is it absorbed by the lymphatics or veins, and carried into the blood? Is it possible that so much air can be mixed with the blood without very serious, if not fatal consequences? I very strongly doubt that this kind of absorption takes place. Does the air escape through the skin or mucous membrane? I know not; it really disappears, but by what channel is not explained. It might be worth while to put a patient of this kind into a warm bath for as long a period as is quite safe, to observe if there be any escape of air from the surface of the body.

Now, as to the prognosis of cases of this nature, I consider that emphysema need create no alarm, except in relation to its pressure upon the blood-vessels (especially the veins), or other parts important to life, such as those which minister to the respiratory functions. It is plain that, independently of any uneasiness which the trachea, lungs, or pneumogastric nerves may experience, the pressure of air upon the muscles of respiration impedes, and interferes with, their free action. Another source of danger should not be overlooked—viz., the fact that the pressure upon the superficial veins occasions a great accumulation of blood in the interior of the body, more particularly at the heart and lungs, which organs are already overburdened by the immediate results of the fractured ribs.

You will be pleased to notice that the same phenomena are observed in general anasarca. If, then, emphysema of the sub-cutaneous cellular tissue be connected with some danger, it becomes a matter of importance that such cases should be properly treated.

I would advise you not to be in a hurry to interfere; but when you wish to give relief, it may be done by puncture or incision. Punctures are sometimes made into the emphysematous parts, and they are strongly recommended by some surgeons; but I prefer incisions to punctures, as the latter, as far as I have seen, act very unsatisfactorily. These incisions should be made with care, and important parts be sedulously avoided; you will find that a length of half an inch will be quite sufficient, but the incisions must be precise, clean, done at once, and deep enough to give free exit to the air pent up in the cells of the subcutaneous areolar tissue. Do not tear or lacerate the walls of the incisions by introducing the finger or forceps, for the purpose of enlarging them; for if the cellular tissue be lacerated into shreds, it is more likely to induce coagulation of the blood associated with the incision, and so contribute to a closing of the interfibrillar spaces of the areolar tissue; indeed, without this additional interference with the passage of the air through the incision, the air itself in passing seems to have a tendency, by its drying effects upon the exposed structures, to seal the areolar tissue; hence it becomes necessary to make more incisions. In anasarca, however, punctures act very favourably, and produce great relief, principally by disencumbering the respiratory muscles of their load of fluid, and so permitting respiration to be more freely performed. Such punctures also allow a great accumulation of blood in the superficial veins, and thus act very beneficially by relieving internal congestion. Precisely the same reasons, in explanation, and as principles for practice, apply to cases of emphysema. I have, finally, to observe, that in cases of extreme and progressing emphysema from fractured ribs, unconnected with an external wound, it will be advisable to cut down freely to the fractured ribs, if feasible, in order to make an external wound, so as to allow the air to pass towards the external parts and exterior of the body, rather than accumulate in the chest. I have done this in practice with great advantage. You can thus give free exit to the air; such measures will be eminently necessary when you perceive that a dangerous kind of emphysema is making progress.—*Lancet, May* 29, 1852, *p.* 507.

69.—*Simple Mode of applying Pressure in Chronic Enlargement of certain Bones, &c.*—[Dr. INMAN, of Liverpool, records the following case:

M. C., a delicate girl, three years of age, had a swelling of the left knee-joint, which was three-quarters of an inch larger than the right, due to an enlargement of the head of the tibia and condyles of the femur.]

Considering this to be a case more likely to be benefited by steady pressure than by more severe remedies, I had recourse, at first, to strapping; but, finding this of no use, I directed the mother to procure a piece of thin vulcanized India-rubber cloth, which she was to shape to the knee, allowing an interval in front of about three-quarters of an inch. The edges were to be bound by a piece of thin leather, and a piece of wash-leather was to be placed as a tongue between the laced portion and the knee. Holes were to be made in the cloth behind the binding, and the whole was to be laced like ladies' stays. The elastic was to be worn during the day and night. Exercise was not prohibited, and no medicine was ordered. I saw her again in ten days. The bandage had been worn for fourteen hours daily, and taken off at night. The knee was reduced a quarter of an inch in circumference.

In ten days she called again, complaining of pain and œdema of the leg, in the evening, from pressure. On removing the elastic, whose edges now overlapped, I found the knee restored to its normal size and shape. The child could run about without pain or inconvenience. I directed the disuse of the bandage, unless the swelling should return; and told the mother, that, though I could not promise that there would be no return of the complaint, I considered the child as cured.

It is unnecessary to make any long comments upon this case. The fact of a morbid deposit in bone being absorbed, or, I might almost say, a threatened white-swelling, cured in three weeks, without blisters, issues, or caustics, without confinement, or even complete rest, is sufficient to speak for itself. Of course, such a plan can only be adopted when there is no reason to believe that active inflammation or purulent deposits are present, and where there is no severe pain.

The only novelty in the idea is, probably, the kind of elastic adopted, which is superior to the elastic web, both on account of its cheapness and its smoothness.—*Med. Times and Gazette*, *Aug.* 28, 1852, *p.* 223.

70.—*On the Pathology and Treatment of some obscure Cases of long-continued Pain in Bone.* By Henry Lee, Esq.

It appears that long-continued pain in bone may arise from a variety of different pathological conditions, and that the chronic irritation, which precedes the deposit of new bone, may depend, among others, upon the following local causes:—1. Upon the formation of pus within the bone. 2. Upon the deposition there of more solid material arising from the poisons of mercury, or syphilis. 3. Upon a collection of tubercular matter in bone; or 4, upon the presence of a necrosed portion of cancellous structure.

When the source of the continued irritation is thus situated within the bone itself, it seems not unreasonable to conclude that a similar plan of treatment would be available, from whatever cause that irritation may arise; and the results hitherto obtained would appear to lead to the inference that relief may be expected from an artificial opening in the several classes of cases.

Wherever there is reason to suspect that pain in a bone is kept up by the presence of some morbid or foreign matter in its interior, or by the pressure produced by a redundancy of bony deposit, it appears evident that the removal of a piece of the shell of the bone is the rational mode of treatment. An opportunity is thereby afforded at once for the escape of any confined matter, and the tension of the parts is relieved; and it appears not improbable, from the favourable effects hitherto obtained by this mode of treatment, that it may hereafter be extended to the relief of many cases of protracted and obscure affection of the osseous system.—*London Journal of Med.*, *Oct.*, 1852, *p.* 889.

AMPUTATIONS.

71.—ON AMPUTATIONS.

By G. J. GUTHRIE, Esq., F.R.S.

[Mr. Guthrie commences some very important observations upon this subject in a series of lectures in the 'Lancet,' by considering the necessity of a tourniquet. He says]

§ As a tourniquet cannot be applied in amputation at the hip-joint, nor even at that of the shoulder-joint, without doing harm, its inutility is proved in the greatest operations; and recourse should not be had to it in the smaller or less dangerous ones, provided sufficient assistance can be obtained. When the surgeon has only one assistant, he should apply a tourniquet; or even if he should have several bad ones on whom he cannot depend.

§ There is always more blood lost, and particularly in secondary amputations, when a tourniquet is used, than when the principal artery is compressed by one assistant, and two others are ready to press on the outside of the flaps, or upon the divided vessels, with the ends of their fingers; the force necessary to prevent the passage of blood through the common femoral, or the axillary artery, being merely that of the finger and thumb, applied in a very gentle manner, or even of the end of the fore-finger of a competent person. I have rarely applied a tourniquet since 1812, and few persons have done more formidable operations under more difficult circumstances. The ancient illusion with regard to the necessity for tourniquets in amputation, must be given up, except by incompetent persons, or by those who are fearful and superstitious, and do not like to depart from the ways of their forefathers.

§ A tourniquet is useful when loosely applied after an operation, and the attendant should be taught how to turn it, so as to suppress any serious bleeding which may take place until the surgeon can be procured. It may be, although it rarely is, necessary on the field of battle. The surgeon need not, therefore, load himself or his assistant, as formerly, with a sackful, for a thoroughly useful tourniquet can be made in a moment with a pebble and a pocket-handkerchief, or a roller. The great point is to know where and how to apply it.

If after a fracture in course of treatment, the principal artery should be wounded by some accidental motion of the bone, amputation should in general be resorted to. A ligature on the artery higher up would fail, and the operation of seeking for both ends of the injured vessel would cause so much mischief in an unsound part, that the consequence would in all probability be fatal.

§ When the femur is suffering from a malignant disease, commencing in the periosteum, or its cancellated internal structure, I am reluctantly obliged to say that the removal of the whole bone at the hip-joint offers the best, perhaps the only, chance of success. In such cases, the operator has in general the power of selecting his mode of proceeding.

It may be laid down as a principle in all cases of accident, whether from shot, shell, or railway-carriages, that no man should suffer amputation at the hip-joint when the thigh-bone is entire. It should never be done in cases of injury when the bone can be sawn immediately below the trochanter major, and sufficient flaps can be preserved to close the wound thus made. An injury warranting this operation should extend to the neck or head of the bone, and it may be possible, as I have proposed, even then to avoid it by removing the broken parts.

§ The principle being established, as a general rule, in all cases of recent injury, that the femur must be broken at least as high as the trochanter to constitute an imperative case for this operation, the next point of importance relates to the manner of forming the first incisions. The instructions and recommendations to be found in books for the performance of this operation are frequently inapplicable, and are not to be depended upon; the errors occurring from the operation have been considered and performed on the dead body and not on the living, on the normal and not on the injured state of parts. Thus, for instance, it is recommended that an assistant should rotate the knee outwards or inwards, to show the head of the femur: to which recommendation there is the insuperable objection, that no person should suffer this operation who has a knee, or half a thigh, or even a third of one, to move by the rotory process. Pure theorists in surgery have decided upon having a large flap made on the fore part of the thigh, and a smaller one behind, regardless of the fact that this cannot be done in many cases requiring a primary operation from the nature of the injury, although it may be done in many secondary cases, in which this severe operation would not have been required if the limb had been amputated in the first instance. It is the mode recommended by Mr. Brownrigg, who in his operations, which were secondary ones, had a choice of integument, and is perhaps, under these circumstances, the best.

The Baron Larrey tied the femoral artery in the first instance, and then made two lateral flaps; but this operation, dependent on the fear of hemorrhage, was never performed in the British army.

§ My first successful operation, performed in 1815, was done from without inwards, the flaps being anterior and posterior, the artery being compressed against the pubis.

The patient is to be laid on a low table, or other convenient thing, in a horizontal position; an assistant standing behind and leaning over, compresses the external iliac artery, becoming femoral as it passes over the edge of the pubis. The surgeon, standing on the inside, commences his first incision some three or four inches directly below the anterior spinous process of the ilium, carries it across the thigh through the integuments, inwards and backwards, in an oblique direction, at an equal distance from the tuberosity of the ischium to nearly opposite to the spot where the incision commenced; the end of this incision is then to be carried upwards with a gentle curve behind the trochanter, until it meets with the commencement of the first; the second incision being about or rather less than one-third the length of the first. The integuments, including the fascia, being retracted, the three glutæal muscles are to be cut through to the bone. The knife being then placed close to the retracted integuments, cuts steadily through everything on the ante rior part and inside of the thigh. The femoral or other large artery may then be drawn out by a tenaculum or spring-forceps, and tied. The capsular ligament being well opened, and the ligamentum teres divided, the knife should be passed behind the head of the bone thus dislocated, and made to cut its way out, care being taken not to have too large a quantity of muscle on the under part, or the integuments will not cover the wound, under which circumstance a sufficient portion of muscular fibre must be cut away. The obturater, glutæal, and ischiatic arteries are not to be feared, being each readily compressed by a finger until they can be duly secured. The capsular ligament, and as much of the ligamentous edge of the acetabulum as can be readily cut off, should be removed. The nerves, if long, are to be cut short. The wound is then to be carefully cleaned, and brought together by three or more soft leaden sutures in a line from the spine of the ilium towards the tuberosity of the ischium. The ligatures are to be brought out between the sutures and the adhesive strips of plaster assisting them; a little wet lint is to be placed over the wound, and some well-adapted compress under the lower flap; the whole to be retained by a soft bandage. In my successful case there was a shot-hole in the under flap, which did good service; and from seeing its use, I have no objection to a small perpendicular slit being made in the lower flap, and a strip of linen introduced to prevent adhesion, as the immediate union of the flaps cannot be expected, nor is it often to be desired.

This mode of proceeding is more certain of making good flaps where integuments are scarce. Where the integuments will admit of the anterior flap being made by the sharp-pointed puncturing knife dividing the parts after it has been passed across from within outwards, there is no objection, and it may be preferred. I have had two added to each of the cases of instruments supplied to the army for the purpose.

Professor Langenbeck, when lately in London, informed me he had performed amputation at the hip-joint, in the Holstein war, several times, and he believed more than once successfully, making the anterior flap by the pointed knife, cutting from within outwards, but the posterior one by cutting through the integuments from without inwards, as I have recommended, in order to make it of a more equal and proper thickness. One point to be attended to is to leave as little as possible of the internal tendinous structure of the great glutæus muscle, which does not readily unite with other parts; a second, not to leave too much muscle behind; and a third, to remove as much as possible of the ligamentous structure about the joint. The after treatment will be the same as in other formidable cases. The shock, however, of the injury, and of the amputation, will rarely render blood-letting necessary. Cordials, in small quantities, with opiates and a light nourishing diet, should be given. The wound should be wetted with cold water, and the patient constantly watched.

Mr. Brownrigg's operation is to be done in the following manner:—The patient is to be placed an a low table and properly secured, with the nates projecting over its edge, the artery being compressed; the surgeon enters the pointed knife between the spine of the ilium and the trochanter major, and carries it across the thigh, as near as may be to the head and neck of the femur, until the point appears on the inside, near the scrotum, which should have previously been drawn away. The knife is to cut slowly downwards, to make a flap, under which, and behind the knife, an assistant inserts his four fingers, in order to be able to grasp the flap and aid in compressing the principal artery, as the operator completes the flap, which it is intended should be a large one.

The assistant holding up the flap, the surgeon cuts through the attachment of the glutæus medius muscle, if it has not been done, opens the capsular ligament of the joint, and cuts through the ligamentum teres. The head of the bone can now be readily withdrawn from the acetabulum. The knife is then to be placed behind the head of the bone and the trochanter, and carried obliquely downwards and backwards, so as to form a shorter flap behind than has been made before.

§ Amputation by the circular incision is to be done in the following manner:—When a tourniquet is used, the pad should be firm and narrow, and carefully held directly over the artery, while the ends of the bandage in which it is contained are pinned together. The strap of the tourniquet is then to be put round the limb, the instrument itself being directly over the pad, with the screw entirely free; the strap is then to be drawn tight, and buckled on the outside, so as to prevent its slipping, and yet not interfering with the screw. Should the screw require to be turned more than half its number of its turns, the strap is not sufficiently tight, or the pad has not been well applied. The patient being placed on a table at a convenient height, the assistants are carefully to retract the integuments upwards, and put them on the stretch downwards, by which means their division is more easily and regularly accomplished. The surgeon, standing on the outside, passes his hand under the thigh, and round above quite to the outside, and there he begins his incision with the heel of the knife, and with a quick, steady movement, carries it round the thigh until the circular division of the skin, cellular membrane, and fascia is completed. The skin cannot be sufficiently retracted unless the fascia be divided, and as the division of the skin is certainly the most painful part of the operation, it ought never to be done by two incisions, when the largest thigh can most readily and speedily be encircled by one. If the fascia should not be completely divided by the first circular incision, it is to be cut with the point of the knife, together with any attachment to the bone or muscles beneath. The amputating knife is then to be applied close to the retracted fascia and integuments, and the outermost muscles are to be divided by a circular incision, with any portion of the fascia that may not have equally retracted. This incision completed, the knife is immediately to be placed close to the edge of the muscular fibres which have retracted, and the remainder of the soft parts divided to the bone in the same manner. In making these two incisions, care should be taken to cut at least half an inch on each side of the great artery by one incision, which should be either the first or second, as may be most convenient. The muscles attached to the bone are to be then separated with a scalpel for about three inches in large thighs, by which means the bone will be fairly imbedded when sawed off. The common linen retractor is now to be placed on the limb, and the muscles steadily kept back while the bone is sawed through. The periosteum is to be divided by one circular cut of the scalpel, after the retractor is put on. The heel of the saw is then to be applied, and drawn towards the surgeon so as to mark the bone, in which furrow he will continue to cut with long and steady strokes, the point of the saw slanting downwards in a perpendicular direction until the bone be nearly divided, when the saw is to be more lightly pressed upon to avoid splintering it, which this manner of sawing will also tend to prevent. During this operation the thigh should be held steadily above, and in such a manner below that the part to be cut off does not weigh or drag on the bone above; at the same time it must not be pressed inwards or upwards, or it will prevent the motion of the saw, or splinter the bone. The retractor is to be removed, the great artery is to be pulled out by a tenaculum passed through its sides, separated a little from its attachment, and firmly tied with a two-threaded strong ligature, provided the dentists' silk is not used, and the tenaculum is not to be withdrawn until this is accomplished; any other vessels that show themselves may be secured, and compression should for an instant be taken off the main artery, when others will start. If used, the tourniquet should now be removed, and the small remaining vessels will be discovered. If the great vein continue to bleed after some pressure has been made upon it, a single-threaded ligature should be put over it; but this should not be done if it can be avoided, and only when the loss of a little blood might be dangerous. If the cancellated part of the bone should bleed freely, the thumb of the left hand pressed steadily upon it, whilst the vessels are tying, will in a short time suppress it. Any inequality of bone should be removed by forceps. The ligatures should now be shortened, one end of each thread being cut off; the stump is to be sponged with cold water and dried; the bandage rolled steadily down the thigh; the muscles and integuments brought forward and placed in apposition, horizontally, across the face of the stump, and retained by leaden sutures and adhesive plasters carefully applied, from below upwards, and from above downwards; the ligatures being brought out nearly as straight as possible, in two or three places between the slips of plaster, unless both ends have been cut short. A compress of lint is to be placed over and under the wound, supported by two slips of bandage in the form of a Maltese cross, vertically and horizontally, and the whole secured by a few more turns of the bandage. No stump-cap is to be applied; the stump is to be raised a little on a proper pillow from the bed, in which the patient lies on his back; and if the bone appears to press too much against the upper flap, the body may be a little raised, which will relieve it.

In secondary amputation of the thigh, the integuments may not be sound, and will not retract, in which case they must be dissected back to an equal distance all round. If the muscles are much diminished in size, or flabby, they should be left even longer than may appear necessary for the formation of a good stump; and this is to be done more especially on the under part, for the bone will frequently protrude under these circumstances, when enough has been supposed to have been preserved. In all these cases the bone should be shorter than usual, and the skin should, if possible, retain its attachments to the parts beneath. No inconvenience can ever arise from too much muscle and skin in a circular stump; but it does sometimes from too much skin alone.

In primary operations there will be from three to seven vessels to be tied; in secondary ones, from ten to sixteen, and even then there may be an oozing from the stump. In this case a little delay in searching for the vessels is necessary; the tourniquet and all tight bandages should be removed, and the stump well sponged with cold water before it is dressed. A certain degree of oozing is to be expected from all stumps, although it does not always occur; but when there is really any hemorrhage, so that blood distils freely through the dressings, the stump should be opened, when the bleeding vessel will generally be discovered readily, though not visible before. A stump under these circumstances should not be closed in the first instance; the parts should be merely approximated until all bleeding has ceased.

When the operation is performed near the knee, the gradual thickening of the thigh prevents the retractation of the integuments, and has an effect upon the vessels of the stump; both of which evils are avoided after the circular incision is completed, by making a cut, of an inch and a half in length, in the integuments through the fascia on each side, in the horizontal direction in which they are recommended to be placed, after the operation is finished; but this will very rarely be necessary.

§ Amputation of the thigh, by the flap operation, is best accomplished by the method adopted by Mr. Luke, of the London Hospital, and which is as follows:—The patient being placed so that the thigh projects beyond the table, the surgeon stands with his left hand towards the body, or on the outside, when amputating the right, and on the inside. when amputating the left, thigh. The knife to be used ought to be narrow, pointed, and longer by two or three inches than the diameter of the thigh at the place of amputation. The point of the knife should be entered mid-distance between the anterior and posterior surfaces of the thigh, which may be effected with accuracy, if the eye is brought to a level with the thigh, when the middle point is easily determined. The posterior flap is to be formed first, by carrying the knife transversely through the thigh, so that its point shall come out on the opposite side, exactly midway between the anterior and posterior surfaces. In traversing the thigh, the knife should pass behind the bone, and will be more or less remote from it in different individuals, according to the greater or less development of the posterior muscles, when, by cutting obliquely downwards, to the extent of from four to six inches, according to the thickness of the thigh, a posterior flap is formed. The anterior flap is effected, not by making a flap, but by commencing an incision through the integuments and muscles on the opposite side of the thigh to the surgeon, and at a little distance anterior to the extremity of the posterior flap. This incision is made from without inwards, through the integuments, so as to form an even curve, and without angular irregularity over the thigh, to near the base of the posterior flap on the side on which the surgeon stands. The length of this flap is determined by that of the posterior. It will, therefore, vary from four to six inches, as before stated; and for its completion, will require a second or perhaps a third application of the knife. In the two flaps thus made, the division of almost all the soft structures is included. a few only immediately surrounding the bone remaining uncut. These are to be divided by a circular sweep of the knife, at the part where it is intended to saw the bone; and in this way it is sufficiently denuded for the application of the saw. The flaps being held back by an assistant, the bone is to be sawn through in the usual way. In amputations of the lower part of the thigh it usually happens that the ischiatic nerve lies upon the surface of the posterior flap, and should be removed. It occasionally occurs, although not frequently, that the popliteal artery, at its commencement, is cut obliquely; but in amputations above the passage of the arterial trunk, through the tendon of the triceps, this does not take place, the division of the artery being usually included in the circular sweep made after the formation of the flaps. The divided arteries being carefully secured, the flaps are to be brought together and retained by three sutures passed through the integuments, at equal distances from each other, and from the extremity or base of the flaps. It appears to be a matter of considerable importance not only that their edges should be kept in apposition, but that their *whole surfaces* should be kept in accurate contact. For this purpose, the following method of dressing is adopted:—The edges, in the intervals between the sutures, are to be held together by strips of adhesive plaster about one inch in breadth. A compress of lint is then to be fitted over each flap—that upon the posterior flap being the larger. The compresses are to cover the flaps only, and not to extend over the extremity of the bone, where their pressure would probably be ill endured. The posterior compress is made large, that it may serve as a cushion on which the thigh rests when the patient is placed in bed. The compresses are to be retained in position by one or two strips of plaster, and supported by a bandage applied carefully around the stump. If this be properly accomplished, the whole surfaces of the flaps are kept accurately in contact with each other, and complete union may be reasonably expected. By securing the perfect apposition and support of the entire surfaces in accurate contact, the disposition to the issue of blood from small vessels is also obviated to a great extent; and it is even probable that vessels of a larger diameter than the smallest, which would bleed, if not restrained, are, by the pressure of the opposing surface, prevented from doing so, and the probability of secondary hemorrhage is diminished. Experience has demonstrated the fact, that primary union of the flaps is most effectually secured in the great majority of amputations thus treated. Indeed, non-union of the flaps is the exception—union, the rule. In the subsequent treatment of the stump, care must be taken to prevent accumulation of discharge in the tracts of the ligatures; and the dressings must be renewed according to circumstances having reference to the quantity of discharge, and the uneasiness of the patient. The line of division of the integuments of the two flaps is situated, at first, in the centre of the face of the stump; but when the flaps have united, a gradual change takes place in the position of the cicatrix: it recedes, by degrees, to the posterior aspect of the thigh, and the bone abuts upon the anterior flap, by which alone it is eventually covered, and the cicatrix is thus removed from its pressure.

§ A protrusion of bone is a disagreeable occurrence after amputation; it will sometimes happen after sloughing of the stump, without any fault in the operator. If, on completing the operation, it is evident the bone cannot be well covered, a sufficient portion should be at once sawn off, and the error remedied.

When the bone protrudes at a subsequent period to the extent of an inch or more, it should be removed by operation, an incision being made on, and down to, the bone, and the saw applied where it is sound. The chain-saw when at hand, answers well, and some should be supplied for the use of the principal hospitals with every army. The protruded end of bone should be held steadily by pincers, or it may be introduced into a hollow tube, which fixes it firmly.

When the bone is badly sawn through, or split in the act of dividing the last layer, or the periosteum is unduly separated, the end will often exfoliate with the split, which may extend up for three or more inches, causing much suffering, and occupying a great length of time before the stump becomes quite sound. A splinter of this kind may even require to be removed at a late or even distant period, from the nervous irritation and suffering it may occasion.—*Lancet, June* 12, 1852, *p.* 555.

§ Wounds of the knee-joint, with fracture of the bones composing it, from musket-balls, require immediate amputation; for although a limb may be sometimes saved, it cannot be called a recovery, or a successful result, where the limb is useless, and is a constant source of irritation and distress after several months of acute suffering have been endured, to obtain even this partial relief from impending death. For one limb thus saved, ten lives will be lost; and the sufferer is often glad, after months and years, to lose the limb thus saved, more particularly when the ball has lodged in the articulating surfaces of either of the bones. Amputation at a secondary period, in these cases, does not afford half the chance of success, for many will not outlive the inflammation and the fever which ensue. The amputation should therefore be immediate, unless excision can be substituted for it.

§ Compound fractures of the patella, without injury of the other bones, admit of delay, provided the bone is not much splintered. If the ball should have pierced the centre of the patella, and passed out in nearly an opposite direction behind, the limb will not be saved. If the ball have struck the patella on its edge, and gone through it transversely, opening into the joint, it will very rarely be saved; but if it be merely fractured, there is hope under the most rigorous antiphlogistic treatment, and delay is proper. A ball will occasionally penetrate the capsular ligament, and lodge in the knee-joint, without fracturing the bone; if it cannot be extracted without opening extensively into the cavity of the joint, and the extraction of the ball is absolutely necessary, amputation had better be performed at first, for it will be untimately necessary. The condyles of the femur and the lower part of the bone being spongy, a ball may pass through them or between them, and fall into the knee-joint, or it may make a prominence on the side of the patella, without passing out, or immediately interrupting the motion of the leg, for the soldier may walk some distance afterwards. The popliteal artery may also be divided in addition, and either of these cases will render amputation necessary; for the ball must be taken out on the fore-part, and the general inflammation of the joint will either destroy the patient in a short time, or, after much distress and hazard, leave him no alternative but amputation. If a ball lodge in the condyles of the femur, within the capsular ligament, and cannot be easily extracted, amputation is advisable; for the limb, if preserved, will not be a useful one. If the ball, on the other hand, lodge without the capsular ligament, and cannot be readily extracted, the wound should be healed as soon as possible; and although it may cause some little inconvenience to the knee-joint, the limb and life of the patient may be saved, as I have seen in many instances, when a continuance of persevering efforts to extract it would have exposed both to great danger. Many cases of wounds of the knee-joint, in which the capsular ligament is wounded, and the articulation opened into without injury to the bones, do well, such as simple incised wounds made with a clean cutting instrument. The success attending all wounds of the knee-joint depends entirely upon the antiphlogistic mode of treatment being rigidly enforced, and to a very great extent. The limb is to be placed in the straight position, a splint is to be put underneath it, in order to prevent any motion, and cold or iced water is to be applied, especially in summer, to diminish the increasing heat. General bleeding may be had recourse to in sufficient quantity to keep all general inflammatory action in due bounds; but it is on local blood-letting that the surgeon must principally rely for the prevention of inflammation. Cupping can sometimes be performed with marked effect; but leeches are more serviceable when they can be procured in sufficient numbers; from twenty to forty, or more, may be applied at a time; and whenever the sensation of heat is felt, and is accompanied by pain, they should be repeated until these symptoms subside. The necessity for the local abstraction of blood is so great, that it should never be lost sight of for a moment; for if suppuration take place throughout the cavity of the joint, it is followed, in most instances, by ulceration of the cartilages and caries of the bones. By local and general bleeding, the application of cold, rigid abstinence, and the straight position, a recovery may sometimes be effected; but wounds of the knee-joint, however simple, should always be considered of a very dangerous nature, infinitely more so than of the shoulder, the elbow, or the ankle. When a poultice is applied to a gun-shot wound of this kind, I consider it the precursor of amputation. Colonel Donnellan, of the 48th Regiment, was wounded, at the battle of Talavera, in the knee-joint, by a musket-ball, which gave him so little uneasiness that he could scarcely be persuaded to proceed to the rear. At a little distance from the fire of the enemy, we talked over the affairs of the moment, when, tossing his leg about on his saddle, he declared he felt no inconvenience from the wound, and would go back, as he saw his corps was very much exposed. After he had stayed with me a couple of hours, I persuaded him to go into the town. This injury, although at first to all appearance so trifling, proceeded so rapidly as to prevent any relief at last being obtained from amputation, and caused his death in a few days.

§ *Excision* of the knee-joint is an operation attended, until lately, with so little success, that it has been rarely performed. It is probable that the result may be more favourable in cases of injury in which the femur and tibia have both been so much injured by a musket-ball, without doing much mischief to the soft parts, as would have rendered amputation necessary. In such cases, provided every accommodation, and particularly absolute rest, can be obtained for the sufferer, excison should be attempted, in preference to the amputation recommended in the two preceding sections. Three cases of success have lately been published by Mr. Jones, of the island of Jersey; and his method of operating is here transcribed, as sent to me by himself.

"In my first case, the incisions were in this form, H, two lateral along each side of the joint, and a transverse one immediately over the middle of the patella. The flaps were then dissected upwards and downwards, the patella removed, (and I do not see any advantage can be gained by keeping it, even if not diseased); the crucial and lateral ligaments were then divided, and the joint completely opened. The leg was afterwards bent backwards on the thigh, and the diseased portion of the femur was cleared, and removed with an ordinary amputating saw. The same method was followed with the tibia; the bones placed in juxtaposition, the flaps brought together by means of a few stitches, and the limb placed in a species of fracture-box. Water-dressing was applied. In the second case, I followed very nearly the same plan, with the exception of my first incisions, which were made something in a horseshoe shape. In the third case, I removed a considerable portion of integument, and, I conceive, with marked advantage. In the two former cases, I think the cure was protracted by preserving all the diseased external parts."

§ Amputation of the leg is performed in two ways—by the circular incision, and by two flaps, the circular incision being only applicable to the calf. In either way the stump should, if possible, be seven inches long, for the more convenient application of an artificial leg, which is now made with a socket to fit the stump, instead of resting against the bent knee, unless the stump is too short for its proper adaptation otherwise.

The operation by the circular incision is performed in the thick part of the leg, and the bone is usually sawn through about four inches from the patella, that, when the stump is healed, there may be sufficient length of bone left to support with steadiness the weight of the body, and that greater facility may be given to the motion of the leg, from the preservation of the insertions of the flexor tendons. The most eligible place for the application of the tourniquet, when used, is about one-third of the length of the thigh from the knee, on the inside, where the artery perforates the tendon of the triceps muscle, and where it can be most conveniently compressed against the bone by a small firm pad, the instrument being on the outside, or opposite the pad; or the compress may be placed between the hamstring tendons, a little distance from the hollow behind the joint, the instrument itself being on the fore part of the thigh. In this method the pad must be thicker, and the compression is more painful, and not more secure. The surgeon should stand on the inside of the leg to be operated upon, that he may more readily saw the fibula at the same time as the tibia, by which the chance of splintering the fibula is diminished; for this bone is held much more steadily under the saw when the tibia is undivided, whatever pains may otherwise be taken by the assistants to secure it. The limb should be a little bent, and the circular incision made with the smaller amputating knife through the skin and integuments to the bone, on the fore part, and to the muscles on the outside and back part; and as the attachment of the skin to the bone will not readily allow of its retraction, it must be dissected back all round, and separated from the fascia, the division of which, in the first incision, would avail nothing, from its strong attachments to the parts beneath. The muscles are then to be cut through, nearly on a level with the first incision, and down to the bones. The inter-osseous ligament between the tibia and fibula is to be divided with the catling; and as several of the muscles cannot retract, in consequence of their attachments to the bones, they are to be separated with the knife; and in the same manner, the inter-muscular septa, or expansions running between them, are to be divided, as they will still prevent their retraction. The retractor with three slips is now to be put on, the centre slip running between the bones, by which the soft parts may be pulled back to a sufficient distance, any adhering part being divided by the point of the knife. The bones are to be sawed through with the usual precautions, and the retractor removed, when the three principal arteries should be secured: the anterior tibial, on the fore-part of the inter-osseous ligament, between the tibia and fibula; the perinæal artery behind the fibula; and the posterior tibial near it, more inwards and behind the tibia; this artery will frequently, however, contract very much, and only shows itself on the compression being taken off the artery above. It in general causes more trouble to secure it than the others, and I have two or three times seen, even in London hospitals, the needle dipped around it in despair, when merely pulling out the artery with the tenaculum, and dissecting a little around it, would have shown the small retracted bleeding vessels arising from it, and have prevented, in all probability, a secondary hemorrhage. The tourniquet, if used, being removed, the smaller vessels tied, and the stump sponged with cold water, and dried, the integuments and muscles should be brought forward as much as possible, and the straps of adhesive plaster applied from side to side—that is, the wound is to be closed vertically or nearly so, that the straps of plaster may not in any way press upon the fore part of the tibia, by which the protrusion of it will be avoided—an occurrence which almost invariably follows when the line of approximation is horizontal, and the strips of plaster press upon the bone. If the spine of the tibia be sharp, it should be removed by the saw, whether the operation be done by the circular incision or by flaps.

§ The flap operation, as performed by Mr. Luke, differs from that of the thigh in some particulars. There is a greater variety in the proportion which the soft parts in the posterior flap bears to those in the anterior flap; and the distance from the bones at which the limb is transfixed in the first step of the operation is subject to such variety, that in the large calf the mid-point for the introduction of the knife lies at some distance from the posterior aspect of the bones; in the small calf it is close to it. The course of the knife through the limb is oblique, instead of transverse, for the purpose of accommodating the line of incision to the plane of the two bones. The anterior flap is formed in the same way as in the thigh amputation, but it has proportionately more integuments and is thinner; yet its base and length are rendered equal to the base and length of the posterior flap, and may be adjusted evenly with it when the stump is dresssed. In the circular division of the remaining soft parts, after the formation of the flaps, there is a necessary variation in the proceedings, from the circumstance of their being two bones united by inter-osseous membrane. It may, however, be accomplished by sweeping the knife around the more distant bone of the two, its point being afterwards carried between the bones through the inter-osseous membrane. While the knife is between the bones its edge may be so turned that the membrane may be divided longitudinally to any convenient extent, for the easy introduction of a retractor, and the soft parts around the bone nearest to the operator may subsequently be divided by a sweep of the knife, in a manner similar to that adopted for the division of parts around the more distant bone. The sawing of the bones and dressing of the stump are accomplished as in the thigh amputation, but more care is required to avoid pressure on the acute margin of the tibia, which, when very sharp, should be removed, and to prevent the pendulous state of the flaps.

When the nature of the injury renders amputation necessary at or immediately below the tuberosity of the tibia, the operation may be done with safety. Baron Larrey recommended the removal of the head of of the fibula in such cases, which I have done with impunity, and made thereby a better stump than if it had not been done; but as the articulating surface of the head of the tibia does sometimes enter into the composition of the knee-joint, and this cannot be known beforehand, the removal of this portion of the fibula is not advisable, neither must the tibia be sawn above the tuberosity, lest the capsular ligament be implicated. As an operation by which the knee-joint is saved, it is important, for although the stump is very short, it forms a solid support for the body, and enables the patient to walk without the aid of a stick, and admits of the adaptation of an artificial leg. The skin, in these cases, must be saved, in every direction, by flaps, to form a covering. When in sufficient quantity, the operation may be done by the circular incision, as much muscle as possible being saved, to aid in forming a covering on the under and outer sides. The posterior tibial artery will be found to have retracted behind the head of the bone, from whence it, or others which may bleed, must be drawn out. The nerves must be cut as short as possible.

Excision of the Ankle-joint.—§ This operation should be performed in the following manner:—Begin the incision behind the external malleolus, an inch and a half above its lower extremity, and carry it downwards and then forwards across the front of the ankle-joint, then under the internal malleolus and upwards, close behind this process, to the extent of an inch and a half; this incision should merely divide the skin, and should not, on any account, wound the subjacent parts. Raise the flap thus made, and, placing the leg on its inside, detach and turn aside the peronæi tendons from the groove behind the external malleolus. Cut through the external lateral ligaments of the ankle-joint, keeping the knife close to the malleolus; then with the large bone-scissors, or nippers, cut through the fibula from one half to three quarters of an inch above its junction with the tibia, and dividing the ligamentous fibres connecting the two bones, remove the malleolus externus. Turn the leg on to its outer side, and cut through the internal lateral ligament close to the tibia, to avoid wounding the posterior tibial artery; this will allow the foot to be dislocated outwards, and the lower end of the tibia to be brought well out through the wound. An assistant keeping the foot and tendons out of the way, the lower end of the tibia is to be removed by a fine saw to the same extent as the fibula, or as high as the injury or disease requires. The articulating surface, or injured part, of the astragalus, is then to be removed, after which, the foot is to be returned to its proper position, and the cut surfaces of the tibia and astragalus brought into and kept in close approximation by suture, strapping, and bandage. The limb is to be placed on an outside leg-splint, having a foot-piece to it; and in order to prevent any matter oozing, an opening should be maintained on the outside of the joint, with a corresponding hole in the dressing and splint, for this purpose, until the recovery is completed. The shot-hole will sometimes answer the purpose when the injury is inflicted by a musket-ball. There are no vessels to tie unless wounded accidentally.

Removal of the Os Calcis.—§ If this bone should be much shattered, and the injury nearly confined to it alone, it may be removed in the following manner. Make a semilunar incision down to the bone from the posterior angle of the inner malleolus, across the sole of the foot to the external malleolus, the convexity of the flap being forwards. This flap being turned back, the tendo-Achillis is brought into view, and is to be separated from its attachment, or cut across above it. The point of junction between the calcis and astragalus being ascertained, the ligamentous fibres are to be cut through, and the joint between them opened, when the knife is to be carried from behind forwards, in order to divide the inter-osseous ligament between them. Some ligamentous fibres passing between the calcis and cuboid bones are then to be cut through, when the os calcis may be dissected out without difficulty. The posterior tibial artery and nerve will be divided.

This bone was first removed for disease of its substance by Mr. Hancock, and has been done several times since by Mr. Greenhow and others, with success.

§ When the bones of the leg are not injured, although those of the tarsus are so far destroyed as to render amputation necessary, the operation introduced by Mr. Syme for removing the foot at the ankle-joint, will be well adapted for this injury, provided the soft parts have not been so much destroyed as to prevent the formation of a covering flap or flaps. His directions are,—

"The best instrument for performing the operation is a large bistoury, or small amputating knife, with a blade about four inches long. There is no occasion for a tourniquet, as the assistant has complete command of the vessels by grasping the ankle. In my first operation, the flap was made unnecessarily long; and I feel confident that the following directions may be trusted for exactly determining its proper extent. The incisions across the instep and sole of the foot should be curved, with the convexity forwards, and exactly opposite each other. A line drawn round the foot, midway between the head of the fifth metatarsal bone and the malleolus externus, will show their extent anteriorly, and they should meet a little way farther back, opposite the malleolar projections of the tibia and fibula. Care should be taken to avoid cutting the posterior tibial artery before it divides into the plantar branches, as, in the two cases where I did so, there was partial sloughing of the flap. If the ankle-joint is sound, the malleolar processes should be removed with the cutting-pliers; but if the articulating surfaces of the tibia and fibula be diseased, a thin slice of these bones should be sawn off. The edges of the wound should be stitched together, and lightly dressed. When the cure is completed, the stump is of a conical form, and having for its apex, or central point of pressure, the thick integument which covered the heel, to which a particular kind of shoe must be adapted, with which the sufferer can walk much better than could have been previously expected."

This operation has not answered, in some of the hospitals in London, the expectations entertained of it from its success in Edinburgh, the flap formed from the under part, or heel, having frequently sloughed. This, Mr. Syme declares, is the fault of the operators, and not of the operation, sufficient attention not having been paid to preserve the posterior tibial artery intact, until it has divided into its plantar branches; and he insists, with reason, that the operation should be done exactly as he has described it. It is an operation more likely to be eminently successful in military than in domestic surgery, from the parts being sound in the former, with the exception of the injury for which it is performed.

Domestic Surgery, or that of civil life, has in these operations of excision of the ankle-joint, and of amputation at that part, repaid her Amazonian sister of military warfare for the improvements she has introduced into the great art and science of surgery; and a degree of generous emulation will be excited and maintained between them, which, it may be believed, will in the event of a European war, add much to its scientific and preservative character.

§ A musket-ball will seldom pass through the foot without injuring a joint of some kind, or wounding a tendon or nerve; and the injury to the fascia, which is very strong on the sole of the foot, and frequently covered by much thickened integument, is always attended with inconvenience. The extraction of balls, of splinters of bone, of pieces of cloth, and the discharge of matter, become more difficult, and often cause so much disease as ultimately to render amputation of the foot necessary. Tetanus is a frequent consequence of these injuries, and is a disease, in its *acute* form, certainly remediable by no operation or medicine at present known. Amputation has always failed in my hands, although it was strongly recommended by the Baron Larrey. The operative surgery of the foot should be done as soon after the injury as it can be conveniently accomplished, for a large, clean, incised wound is a safe one, compared with a torn surface and splintered bone, with extraneous substances, of much less extent; and as a ball lodged in the foot is always very dangerous, great attention should be paid in the examination of even slight wounds. A cannon-shot can seldom strike the foot without destroying it altogether; it may, however, strike the heel, and destroy a considerable part of the os calcis, without rendering amputation necessary, if the ankle-joint be untouched; for by due attention in removing the spicula of bone at first, and by making free openings for the discharge of matter in every direction in which it may appear inclined to insinuate itself, the limb may be preserved in a useful shape.

§ Wounds from cannon-shot injuring the fore part of the foot are better remedied by amputation at the joints of the tarsus with the metatarsus, than by sawing these bones across; but when the injury affects only one or two toes, they may be removed separately, recollecting that it is of greater importance to preserve the great toe than any other, and this toe is worth preserving alone, when any one of the others would be rather troublesome than useful. Musket-balls seldom commit so much injury as to require amputation as a primary operation, although they frequently render it necessary as a secondary one. The splinters of bone are to be removed, the ball and extraneous substances are, if possible, to be taken out; and if the bones, tendons, and blood-vessels are so much injured as to render the attempt to preserve them useless, amputation is to be performed; but if the preservation of the limb be thought practicable —aud it generally will be so in wounds from musket-balls—the attempt must be made under the most rigid antiphlogistic treatment, the local application of leeches and cold water from the first, and with free openings for the subsequent discharge. Musket-balls seldom injure the metatarsal bones so as to require their removal with their toes, and under the treatment above-mentioned, these wounds will in general be healed without further operation. Wounds from grape-shot occasionally render the removal of the metatarsal bone of the great toe at the tarsus necessary, although much should be done to save it. The little and adjacent toes are also sometimes removed at the tarsus, the middle ones but seldom, as it is not an easy operation to perform, in consequence of the naturally close attachment of these bones, and the additional compactness they have acquired from the pressure of the shoe. Hæmorrhage from the arteries of the foot authorizes in a very slight degree amputation, even when superadded to other causes; for the incisions necessary to secure the bleeding vessels will not, in general, add much to the original injury unless they are very extensive; on the contrary, they will render the wound less complicated and more manageable.

§ Amputation at the tarsus, when it is proposed to save the flap from the under part of the foot, is performed in the following manner: The joints of the metatarsus with the tarsus, being well ascertained, an incision is to be made across the foot, in the direction of the joints, but from half to three-quarters of an inch nearer the toes, and the integuments drawn back over the tarsus. From the extremities of this incision, two others are to be made along the sides of the great and little toe, for about two inches and a half, according to the thickness of the foot; and the ends of these two incisions are to be united by a transverse one down to the bone, on the sole of the foot, the corners being rounded off. The flap thus formed on the under part is to be dissected back from the metatarsal bones, including as much of the muscular parts as possible, as far as the under part of the joints of the tarsus. The metatarsal bones are now to be removed by cutting into and dislocating each joint from the side, commencing on the outside, by placing the edge of the knife immediately above, but close to the projection made by the posterior part of the metatarsal bone supporting the little toe, which prominence is always readily perceived. The arteries are to be secured; any long tendons and loose capsular ligament are to be removed with the knife or scissors, and the under flap, formed from the sole of the foot, is to be raised up so as to make a neat stump, when brought in contact with the upper portion of integuments that were first turned back; the whole to be retained in this position by sutures, adhesive plaster, and bandage. When the skin of the under part of the foot is much torn, which is not uncommon in a wound made by a fragment of a shell, the flap cannot be formed from it; in this case it must in great measure be saved from the upper part; but the integuments being here so much thinner, the flap is not so good a defence against external violence, and will be more readily affected by cold. The metatarsal bones may be sawn across in a straight line, in preference to removing them at the joint; and although the whole may be sawn across at once with more ease than any one of them individually, except the outer ones, yet the stump is never so much protected from external violence as when the operation is performed at the joint of the tarsus.

§ Amputation of the foot, leaving the astragalus and calcis, may, in certain cases of injury anterior to these bones, be performed with advantage, care being taken to make the under flap so large that the line of cicatrization may be on the upper and anterior edge of the stump, rather than transversely across the face of it, in order to render it firmer and better able to resist and sustain any pressure which may be applied to it.

The limb being placed on the table, and held by an assistant, the surgeon ascertains the situation of the joint formed by the junction of the astragalus with the scaphoides, which will be indicated by the prominence on the inside of the tarsus, discoverable by passing the finger forwards from the malleolus internus towards the side of the great toe. The joint of the os cuboides with the os calcis on the outside, is always to be found about half an inch behind the projection formed by the posterior part of the metatarsal bone of the little toe. The under part of the foot being firmly held in the palm of the surgeon's hand, he places the point of the thumb on the external joint, and that of the fore-finger over the internal one, which indicate a transverse oblique line, for the first incision, and which should commence near the thumb, and be continued with a semilunar sweep, the convexity towards the toes, until it terminates at the side of the foot where the fore-finger was placed. The joint between the astragalus and scaphoides is now to be opened, by directing the knife from within obliquely outwards towards the projection of the metatarsal bone of the little toe. These bones are then to be dislocated by pressure, and the ligaments retaining them divided. The joint between the os cuboides and the os calcis is now to be opened from without inwards, and the bones dislocated. The strong inter-articular ligament being cut, and the joint largely opened, the knife is to be passed between the under surfaces of the scaphoides and cuboides, and the soft parts adhering to them, and cut from behind forwards a flap sufficiently large to cover the wound, which is then dressed in the usual manner.

§ Mr. Wakley, jun., has lately performed a successful operation for the removal of the astragalus and calcis, deserving of imitation in peculiar cases. A description of the operation is given in a report by Mr. Weeden Cooke, the house-surgeon, and reported in the 'Lancet' of July 1, 1848. It is as follows:—

"The patient being under chloroform, the diseased foot (the left) having been drawn forwards, so as to be free of the table, I made an incision from malleolus to malleolus, directly across the heel. A second incision was next carried along the edge of the sole from the middle of the first, to a point opposite the astragalo-scaphoid articulation, and another on the opposite side of the foot, from the vertical incision to the situation of the calcaneo-cuboid joint. These latter incisions enabled me to make a flap about two inches in length from the integument of the sole. In the next place a circular flap of integument was formed between the two malleoli posteriorly, the lower border of the flap reaching to the insertion of the tendo-Achillis. This flap being turned upwards, the tendon was cut through, and the os calcis having been disarticulated from the astragalus and cuboid bones, was removed, together with the integument of the heel, included between the two incisions. The lateral ligaments connecting the astragalus with the tibia and fibula were now divided, and the knife was carried into the joint on each side, extreme care being observed to avoid wounding the anterior tibial artery, which was in view. The astragalus was then detached from the soft parts in front of the joint, and from its articulation with the scaphoid bone, and the malleoli were removed with the bone-nippers. The only artery requiring ligature was the posterior tibial. During the few minutes the operation lasted, the patient did not manifest the slightest symptoms of pain or uneasiness. On bringing the edges of the flaps together, they were found to fit with accuracy, and were secured by twelve interrupted sutures. The wounds were covered by several folds of lint, and supported by a light bandage. The patient, who had lost but very little blood, was then removed to his bed.

"On the 21st of February, he was discharged the hospital, exactly two months after the operation, to go into the country, the foot being well, with the exception of a small opening. He came again up to town on the 15th of April, and had become stout. The sinus on the left side of the foot had closed, but a slight collection of matter had formed a little above the instep; this was discharged by means of a puncture with the lancet, and he was directed to return to the country, and dash cold water over the foot two or three times daily. On the 10th of June he returned to town, and to his employment. There was then not the vestige of a wound, the last opening having completely healed. He was ordered to wear a high-heeled boot. He is now a healthy-looking man, and walks very well."

As the posterior tibial artery must be divided, the preservation of the anterior one is essentially necessary; the success of the operation depends upon it. This artery, accompanied by its vein and nerve, lies close upon the astragalus; the artery may be said to be even attached to it, a point requiring the greatest attention in dissecting out the bone without injuring this vessel, which is seen under the scalpel.

§ Amputation of a single metatarsal bone, on the outside or inside of the foot, is to be done by an incision round the root of the toe, terminating in a line on the outside of the foot, which is continued down to the joint of the tarsus. The integuments are turned back above and below from the metatarsal bone, which is to be dissected out, with the toe attached to it, and the flaps brought together, so as to leave but one line of incision. In military surgery there is always a wound; and when the removal of the bone is necessary, it is in general an extensive one, and with loss of substance, so that a covering cannot be saved in this way, especially on the upper part of the foot, where the ball or piece of shell strikes. The surgeon, therefore, must be prepared to look for his covering on the under part, where he will occasionally not be able to procure it in sufficient quantity, and it must not be forgotten that the neighbouring parts will often be injured. The object must then be to save the integuments from such parts as are uninjured, so as to cover in the wound as nearly as possible when the bone is removed. In doing this the first incision should commence at the upper and inside of the toe, and be carried round so as to separate the toe from its attachment to its fellow. If the injury be entirely on the upper part, the continuation of this incision must be so regulated as to form the whole of the flap from below, and the commencement of it above must be continued round the injured part, so as to meet the lower end near the articulation of the bone with the tarsus, and *vice versâ*. If the ball have gone directly through, destroying the integuments above and below, the incisions must surround the injured part in such manner, on the upper and under side of the foot, as to allow the flaps to be formed in every other part, except where the injury was inflicted, and from whence granulations must arise. By saving skin everywhere else, the wound will be much diminished in size, will heal sooner, will be less liable to suffer from external violence, and less obnoxious to the subsequent pain, which generally at intervals attends wounds of this kind.

§ M. de Beaufoy invented a foot for the wooden pin used by the soldiers in the Invalides, at Paris, who had suffered amputation above or below the knee, which Mr. Bigg, of Leicester square, has tried in a satisfactory manner on some of the old soldiers similarly mutilated at Chelsea Hospital, by permission of the authorities; and one of them reports, that with it he not only found his step to be steadier, and taken with greater certainty, but also that its length was much increased, and that he could walk twice the distance in the same time as he could with his ordinary pin-leg.

The advantage of the invention is, that whereas a common wooden pin only gives one point of support, and consequently the body is obliged to raise itself, so as to describe an arc, of which the end of the wooden pin is the centre, the curved foot acts like a *series of levers*, each successive point of it being a *fulcrum*. It may be compared to a portion of a wheel: the body of the patient is rolled forward, with scarcely any effort of his own, the support being continuous, and preventing the slightest liability to slip. It also lessens the shock of walking, as the foot begins to act before the whole weight of the body is thrown upon it.—*Lancet, July* 17, 1852, *p.* 47.

§ An upper extremity should not be amputated for almost any accident which can happen to it from a musket-shot; and there is scarcely an injury of the soft parts likely to occur which authorizes amputation as a primary operation.

§ If the head or articulating extremity of the bone entering into the composition of the shoulder-joint be merely or slightly injured by musket-shot, the arm ought to be saved with some defect of motion in the joint. The wound should be enlarged in the first instance, to allow of a sufficient examination with the point of the finger, and any loose pieces of bone should be removed. Inflammation is to be restrained within due bounds until suppuration has been established, when, if a clear depending opening should not exist for the discharge of the matter poured out, it should be made, and any loose portions of bone removed. The principal points to attend to are, the prevention of sinuses around the joint, by the formation of dependent openings, position, perfect quietude, due support, the methodical application of bandages, and occasional mild stimulating injections into the wound. A simple incised wound penetrating the joint, and even injuring the bone, does not call for any immediate operation. An attempt should be made to effect a cure by the first intention, which can only be effected by means of a proper position and support.

§ If the head of the bone be much splintered, or if a ball have gone through it, that portion should be sawn off; for a part thus injured has often been a source of great inconvenience and suffering for many years afterwards—during, in fact, the remainder of the life of the sufferer; which misery would have been avoided by the excision of the bone in the first instance—an operation which ought in fact to be done even at a later period, if it has not been performed at the time when the injury was received.

§ When the splinters extend far into the shaft of the humerus, it may be proper to amputate the whole extremity, especially if the great artery be also wounded; but the shaft is seldom broken in such accidents to any great extent, and amputation should be confined almost to injuries from cannon-shot or shells, or heavy machinery, destructive of the soft parts as well as of the bone.

§ When the injury done to the upper arm is so extensive that it cannot be saved, although the head of the humerus is not injured, the amputation should take place immediately below the tuberosities, and not at the joint, which latter operation always renders the shoulder flatter, and the appearance of the person more unseemly, than when the head of the bone is left in its place.

§ It will frequently happen that the arm may be irrecoverably shattered, and the thorax partake in a less degree of the injury, there being apparent only some slight contusion or grazing of the skin; if low down, the elasticity of the false ribs may have prevented the integuments being much injured in appearance, although the blow has been violent; yet the force of the large shot may have ruptured the liver or spleen. If higher up, it may perhaps fracture the ribs, in addition to a more severe contusion of the integuments. When these accidents occur, the symptoms arising from the wound or contusion of the trunk of the body are to be first considered. If they do not indicate a speedy dissolution of the patient, or the prospect of such an event in two or three days, the operation ought to be performed, and a chance of recovery given to the sufferer, which he would not have, the arm being retained, and the injury of the chest remaining the same. The danger to be apprehended in the more favourable cases is from inflammation, and this will be rather diminished than increased by the operation; the danger of deferring which is manifest and certain, whilst the injury committed in the thorax or abdomen is not ascertained, and its effects may be obviated. If the termination should be unfavourable, it can only be a matter of regret for the sake of the individual, and not for the non-performance of a duty. If the cavity of the chest be laid open, or several ribs beaten in, or a stuffing of the lungs take place from a large ruptured blood-vessel, all of which circumstances are obvious, and cannot be mistaken, the operation would, in all probability, be useless. A hemorrhage of short duration, or the expectoration of blood in moderate quantities, although a dangerous symptom, is not to be considered as depriving the patient of a reasonable chance for life, for it frequently follows blows from more common causes, and from which many people recover. If the operation be delayed to ascertain what injury may have been done to the chest, from the symptoms that will follow, the danger resulting from both will be increased; and even when it is ascertained that there is but little mischief existing in the thorax, the operation can no longer be performed with the same propriety, in consequence of the inflammation which has supervened; and the patient will probably die, when he would have recovered under a more decided mode of treatment.

§ A round shot or flat piece of shell may strike the arm, after rebounding from the ground, or when nearly exhausted in force, without breaking the skin, or only slightly doing it, yet all the parts within may be so much injured as not to be able to recover themselves: the bone may be considerably broken or splintered, the muscles and nerves greatly contused. The injury may not, perhaps, be quite so extensive. The bone may be merely fractured, and yet the soft parts will often be so much destroyed as not to be able to carry on their usual actions. A ruptured blood-vessel may, with an apparently slight external wound of this nature, pour out its blood between the muscles, and inject the arm to nearly double its size, all of which are causes that render an operation necessary, and require decision, for inflammation will, and mortification may, ensue in a short time, when the most favourable moment for operation will have been lost.

§ *Amputation at the shoulder-joint* is an operation of little surgical importance. The fear formerly entertained of loss of blood has passed away, and every surgeon now knows that if he should happen to cut the axillary artery unintentionally, it can be held between the forefinger and thumb, without difficulty or danger, until a ligature can be placed upon it. No accomplished surgeon of the present day should give himself the least concern about compressing the subclavian artery. It is, on the contrary, better, when the arm is raised from the side preparatory to entering or using the knife, that the surgeon should then feel the pulsation of the artery in the axilla, that he may the more easily avoid, and subsequently command it. The axillary artery does not throw out much blood at each pulsation, and a little pressure with the end of the forefinger will always prevent bleeding until the surgeon is prepared to take hold of the vessel with the tenaculum or forceps. The operator should, in fact, divest himself of all fear of hemorrhage. When gentlemen are, however, afraid, and cannot help it (for Henry IV., of France, *ce roy si vaillant,* always felt an inconvenient intestinal motion when a fight began), compression may be made upon the subclavian artery, by the thumb of an assistant, the round handle of a key, or the padded end of the handle of a tourniquet; the latter forms the best pad, and is usually at hand.

§ The great point to be attended to in performing the operation is, to save skin to cover the stump. The directions, therefore, which are usually given for doing it after any particular method can only be occasionally useful, for the surgeon may not always be able to select the parts to be divided or retained. In cases of malignant disease of the bone and periosteum of the middle of the arm, the operation should be for the removal of the whole of the bone at the joint, and not the amputation of it below the head, although the appearance of the integuments, and of the bone itself, would seem to encourage the attempt to preserve the roundness of the shoulder. In such cases the removal of the extremity at the joint may be done by any one of the many ways which have been recommended for its performance. In none should the acromion or coracoid processes be exposed, unless previously injured. Neither is it necessary to lose time, or to give pain, by depriving the glenoid cavity of its cartilage; but it should always be borne in mind, that if the nerves are not shortened after the removal of the arm, they may be included in or adhere to the cicatrix, and cause, during a long life, much distressing pain to the sufferer.

§ Amputation at the shoulder-joint, performed immediately after the receipt of an injury, is now a very simple operation; for which simplicity English surgery is indebted to the Peninsular war. As a *secondary* operation, or done at a later period, when the parts are all impacted together, it is somewhat less so. In both stages it is absolutely necessary to remember—1st. That except in cases of disease and not of injury, the shaft of the bone must be broken; and that *all* the directions usually given for rotation of the arm inwards and outwards, during the operation, are *unnecessary cruelties* not to be attempted with a broken bone. 2nd. That the arm should always be raised from the side and supported by the hand of an assistant, who can feel, if he pleases, at any time of the operation, the pulsation of the axillary artery; and all operative methods are condemned, in which this precautionary measure is not the first step.

§ *Operation by two flaps, external and internal.*—The outer, beginning near an inch below the acromion process, (the hair in the axilla having been previously removed), is to be carried down with a gentle curve so deeply as to divide the deltoid muscle, and to show the long head of the triceps at its under and outer edge. The second incision is to be carried in a similar direction on the inside, through the deltoid muscle, but need not divide the insertion of the pectoralis major, which should be exposed. These flaps being held back, the joint will be seen and readily opened into at its upper part, by cutting upon the head of the bone, in doing which the long tendon of the biceps will be divided, which allows the head of the humerus to drop from the glenoid cavity sufficiently to admit the fore-finger of the left hand, on which the supra-spinatus, infra-spinatus, and teres minor may be cut through externally, as they go to be inserted into the great tuberosity, and the thick tendon of the sub-scapularis muscle internally, where it is attached to the smaller tuberosity. The head of the bone is then readily drawn out from the glenoid cavity, when the inner flap, including the axillary artery, vein, and nerves, may be taken hold of between the two fore-fingers and thumb of an assistant, whilst the surgeon with one sweep of the knife, divides all the remaining parts below. The axillary and the posterior circumflex arteries will have to be secured; the anterior circumflex, when arising from the posterior, is frequently cut off with it; the nerves are to be shortened; the flaps brought together by sutures; and an especial pad placed upon the pectoralis major to prevent unnecessary retraction if possible.

§ *The operation by one*, or nearly one upper flap, is to be performed when the under soft parts of the arm have been destroyed and the bone broken. It may be done by thrusting a small two-edged knife through the integuments and under the deltoid muscle, from side to side, to form a flap; or it may be may be made by commencing an incision an inch above the posterior fold of the arm-pit, and carrying it over the arm in a curved form, the convexity being downwards, to the same height on the anterior fold; the lowest part of the incision being five fingers' breadth from the point of the acromion, the posterior end or point of it being somewhat higher than the anterior one. The flap turned up, and the tendon of the pectoralis major divided, the head of the bone is to be exposed and separated as before stated, as much as possible of the integuments being preserved on the under part of the arm. This will often be best done by dissecting out the head and broken pieces of bone, and then preserving in succession, every piece of sound integument, before the artery, vein, and nerves, are divided.

§ Lisfranc, and many French and Continental surgeons, recommend the operation to be done with a pointed, double-edged knife, in the following manner:—The arm being approximated to the trunk, in a state of half pronation, the point of the knife is to be entered at a small, triangular space, which may be perceived on the inside of the fulness of the shoulder, bounded above by the scapular extremity of the clavicle, and a small part of the acromion; on the inside, by the coracoid process; and on the outside, by the head of the humerus. The knife thus entered obliquely is to be passed across to the outside, opening in its passage into the joint, when, by sliding the knife forwards over the head of the bone, whilst the deltoid is raised up by the operator or an assistant, a flap is to be formed, during which proceeding the arm is to be raised from the side, to facilitate its performance. If this flap be well made, the upper part of the capsular ligament, the tendons of the long head of the biceps and of the supra-spinatus, are divided, and the tendons of the infra-spinatus, teres-minor, and sub-scapularis, are also cut through in part, if not entirely. The upper and posterior flap is thus completed.

In the second step of the operation, the surgeon passes the knife behind the head of the humerus, and makes the under and anterior or inner flap, by cutting downwards and inwards, including in it a very small portion of the deltoid, the pectoralis major, latissimus dorsi, teres major, the triceps, coraco brachialis, the short head of the biceps, the vessels and nerves, when the limb is separated from the body. The flaps are nearly of the same size, and are to be brought together by sutures.

M. Baudens recommends the operation, performed in this manner, to be begun by introducing the double-edged straight knife from below, and passing it upwards to the same spot where Lisfranc commences.

In the secondary operation, or that done several weeks after the receipt of the injury, in consequence of the attempt to save the arm having failed, the soft parts will often be found so altered and impacted together, that they will not yield or separate, and nothing is gained but by each cut of the knife, causing thereby some little delay, inconvenience, and loss of time.

§ *Amputation of the arm immediately below the tuberosities of the humerus* ought to be done in the following manner:—the arm being raised from the side, and an assistant having compressed, or being ready to compress, the subclavian artery, the surgeon commences his incision one or two fingers' breadth beneath the acromion process, and carries it to the inside of the arm, below the edge of the pectoral muscle, then under the arm to the outside, where it is to be met by another incision, begun at the same spot as the first, below the acromion process. The integuments, thus divided, are to be retracted, and the muscular parts cut through, until the bone is cleared as high as the tuberosities. The artery will be seen at the under part, and should be pulled out by a tenaculum or forceps, and secured as soon as divided. The bone is best sawn, the surgeon standing on the outside; the nerves should be cut short, and the flaps brought together by two or three silk or leaden sutures. There are few or no other vessels to tie, and the cure is completed in the usual time, whilst the rotundity of the shoulder is preserved. This operation is similar to that above recommended for the amputation at the joint, which in many cases it is intended to supersede.

§ *Excision of the head of the humerus.*—The point governing the modus operandi of this operation is, and ought to be, the fact that, under the most favourable state of recovery which can place, the shoulder-joint usually becomes so stiff that its ordinary motions may be considered to be lost. Operative processes which have for their principal object the sparing of the deltoid muscle are unnecessary, for, if spared, it is as useless as if it it had been cut; and it seems to have been forgotten that, when cut, it re-unites, and becomes nearly as strong as before it was injured. It is the joint which cannot be moved, not the muscle which has lost its power. I prefer, therefore, in doing this operation, where the injury will permit of it, to make a *short* crescentic flap by an incision across the anterior part of the shoulder, as in the operation of amputation, which, on being turned up, leaves the joint exposed. The edge of the knife being applied to the head of the bone in a line below, but immediately under the acromion process, divides the capsular ligament, and with it the long tendons of the biceps, on which the arm drops from the socket, or glenoid cavity, and allows the finger to be introduced, when the three muscles inserted into the great tuberosity may be cut through, and the sub-scapularis, inserted into the small tuberosity, should also be divided. The head of the bone is then readily brought out, and may be easily detached from any surrounding connexions, and sawn off with little, or almost no loss of blood. The elbow is to be supported, so as to bring the end of the sawn bone in apposition with the glenoid cavity. The flap may be allowed to unite with the parts below as soon as it will, the shot-holes, if any, being in general sufficient to allow of such discharge as may be necessary.

In cases of *recent* injury, some aid will be obtained in keeping the sawn end of the humerus in apposition with the glenoid cavity, by not dividing the long tendon of the biceps. This must be done by dissecting it out of its groove in the humerus, between the tuberosities, and by cutting through the capsular ligament vertically, so as to follow it up to its attachment to the upper edge of the glenoid cavity, when it is to be drawn aside with a blunt hook, until the operation has been completed: a proceeding difficult of accomplishment in old cases of disease or injury, and in them not necessary nor advisable.

§ Professor B. Langenbeck, in order to save the deltoid muscle, proposed and practised this operation during the Danish war in Schleswig Holstein in the following manner, with success in several instances. Begin the incision through the integuments and deltoid muscle immediately below the anterior border of the acromion, and continue it directly downwards, over the minor tuberosity of the humerus, to the extent of four inches. Separate the parts, open the sheath of the long tendon of the biceps muscle, and draw out and hold it on one side with a blunt hook. Rotate the arm outwards *(if it will rotate)* to facilitate the division of the tendon of the sub-scapularis; then rotate the arm inwards, to aid in the division of the tendons of the supra-spinatus, infra-spinatus, and teres minor muscles, inserted into the great tuberosity. Complete the division of the capsular ligament, push the bone through from below, using the arm as a lever if you can, and saw it off. No arteries of consequence are wounded.

This operation would not be so easy of execution as is supposed in cases in which the head and neck of the humerus are broken from the shaft; and would be very difficult of execution in old cases in which the soft parts are so hardened and impacted as to admit of little or no motion.

§ Whenever the head of the humerus is broken, with even considerable injury to the soft parts around, it will always be better to saw off the broken part of the bone in the first instance, and to retain the remaining portion as clearly as possible in apposition with the glenoid cavity. The suffering will in the end be less, and the cure be effected, in general, without the loss of the arm.

If, from some complication of injury, the axillary or other artery should give way during the treatment, the extremity is not to be amputated. The artery is to be secured by one ligature applied above the opening in it, and another below it; the surgeon always bearing in mind the fact, that the proper way to get at the axillary artery is by cutting *across* the fibres of the pectoral muscle, and not in the direction of them; and that the ligature of the subclavian is not to be resorted to until nothing else remains to be done by which the hemorrhage is likely to be suppressed.

§ *Amputation of the arm* by the common circular incision should only be practised in the space between the lower edge of the insertion of the pectoralis major and the elbow-joint; and rarely in cases of injury from musket-balls. No common flesh wound, made either by cannon or musket-shot, even including a division of the artery, absolutely demands this operation, the bone being uninjured. If, in addition to such a destructive flesh-wound, the bone be broken, or if it be mashed with the muscles by an oblique stroke of a round shot, or the fore-arm be carried away or destroyed, it is admissible. It is to be done in the following manner:—An assistant draws up the integuments with both hands; another does the same downwards, if the parts admit of it; the fore-arm is to be moderately bent The integuments are to be divided by a circular incision, and retracted. The muscles and vessels are to be then cut through by one sweep of the knife, if it can be done. The muscles adhering to the bone are then to be separated from it to the extent of two inches. The retractor is to be applied, and the periosteum divided by one circle of the knife around the bone, and in the circle thus cut the saw is to work until the bone is divided; attention being paid to the directions already given to saw in a perpendicular, not slanting direction. The artery or arteries are to be tied, the surface of the stump cleansed with warm and then with cold water, and dried. Sutures are useful.

§ Mr. Luke performs the operation by two flaps, on the same principle as in the thigh. There is a close resemblance in the manner of amputating the arm by the double flap operation to that adopted for the amputation of the thigh. The first flap is made posteriorly to the bone by transfixing the limb, for which purpose the knife is entered at the mid point between the anterior and posterior surfaces, carried transversely across the limb, and made to cut towards the posterior surface, in an oblique direction, until all the soft structures are divided. It is necessary, in entering the knife, to bear in mind that the bone lies opposite to the mid-point, and that, in carrying the knife across the limb, it would strike against the surface of the bone, unless means were adopted for its prevention. This is easily done by grasping the structures which are to form the posterior flap between the fingers and thumb of the left hand; and by drawing them backwards during the time the knife is entering at the mid-point and being carried across the limb. Having formed the posterior flap, the anterior one is formed as in amputation of the thigh, by cutting inwards from the surface towards the bone with a sweep, which will make this flap equal in length to the posterior. The operation is completed by dividing the remaining soft parts by means of a cut carried circularly around the bone, and by sawing the bone in the line of division. The after treatment is the same as in the thigh.

§ *Excision of the elbow-joint.* An incised wound into the elbow-joint, of moderate extent, cutting off with it a part of the condyle of the humerus or the head of the radius, or a part of the ulna, demands the removal of the injured piece of bone only. The fore arm should be be bent and the antiphlogistic treatment fully carried out. A ball fracturing the olecranon, or other portion of a single bone, although opening into the joint, does not immediately require any operation.

If a ball should lodge in the lower part of the humerus, or in either of its condyles, it should be removed, if necessary, by the trephine, or other appropriate instrument.

When the articulating ends of the humerus, radius, and ulna are wholly or in part injured by a musket-ball, it was formerly the custom to amputate the arm in such instances of great mischief—an operation which should be superseded by that of excision of the joint, by which the fore-arm will be saved, and considerable use of it retained.

To perform this operation, a straight, strong-pointed knife is to be pushed into the joint behind, immediately above but close to the olecranon process, and exactly at its inner edge, to avoid the ulnar nerve, which lies between it and the inner condyle, to which it may be considered to be affixed. The incision thus begun is to be carried outwardly to the external part of the humerus, dividing the insertion of the triceps. At each end of this transverse cut an incision is to be made upwards and downwards for about two inches each way, the three resembling the letter H. The flaps thus made being turned up and down, the olecranon should be sawn across, together with the great sigmoid cavity and the coronoid process of the ulna, the insertion of the brachialis internus being previously separated from the coronoid process. Before this is done, the ulnar nerve should be separated with its attachments from the inner condyle, and turned aside to avoid injury. The joint being now fully exposed, the head of the radius may be sawn off or cut through with the strong spring scissors if possible, above the tubercle into which the biceps tendon is inserted. The extremity of the humerus should next be pushed through the wound, and the broken end sawn off, a spatula or other thin solid substance being placed underneath it, to prevent the brachial artery or median nerve being injured. Any hemorrhage which there may be having ceased, the fore-arm is to be bent, the bones are to be placed in apposition, and the incisions approximated by sutures and sticking-plaster, duly supported by compress and bandage, so that union may take place if possible, particularly of the transverse wound first made. The arm should be supported by a sling, and dressed early, as the shot hole or holes must remain open and discharging. Some motion of the new joint to be formed may be expected under gentle passive motion; but as a stiff joint cannot always be avoided, the arm should be kept bent.

§ *Amputation at the elbow-joint* has been recommended, but not frequently performed. It may be done in any way by which good covering can be obtained, and it has been supposed that the long stump thus made is more useful if the olecranon process be sawn across, and left with the triceps attached to it, rather than if it be removed. When the parts are sound, a flap may be made in front by introducing a straight double-edged knife over the outer condyle, and carrying it across and through the soft parts over the opposite or inner condyle, when by cutting downwards and outwards a flap is to be formed of from three to four fingers' breadth in length. A shorter flap is to be made behind, when both are to be raised, and the bleeding vessels previously secured, the external lateral ligament being divided. The radius is to be separated from the humerus, when the olecranon may be sawn across, or, if the arm be bent, separated from the humerus without difficulty. The flaps are to be brought together and retained in the usual manner.

§ *Amputation of the fore-arm* is seldom required after wounds from musket-balls. The bones can be readily got at, and large pieces removed with ease. The arteries can be cut down upon and secured without difficulty, except at the upper part, and even there with some little sacrifice of muscular parts, which are not to be spared. The fascia may be divided freely in every direction, and as mortification from defect of nourishment rarely takes place in the fingers, as it does in the toes, when the great arteries are injured, every effort should be made to save a fore-arm, however badly it may at first appear to be injured.

The flap operation is to be preferred to the circular, particularly when a little above the wrist; to which operation Baron Larrey and the surgeons of France particularly objected during the late war. Having done it most successfully since 1806, however, it is recommended as preferable to any other, even when the injury admits of its being done near the carpus. When the nature of the injury does not admit of two equal flaps being formed, it must be done by two unequal ones, or even by one, it being important for the fixing of an artificial hand or other help, to have a long stump.

The arm being placed and held firmly in the intermediate position between pronation and supination, with the thumb uppermost, so that the radius and ulna are in one line, a sharp-pointed straight knife is to be entered close to the inner edge of the radius and brought out below at the inner edge of the ulna. It is then to be carried forwards for half an inch, and made to cut its way out with a gentle inclination, so as to form a semi-circular flap. Re-entered at the same point as before, a similar flap is to be made on the outside, the position of the bones being a little altered to admit of its easy execution. The two flaps are to be turned back; the tendon of the supinator radii longus, and all other tendinous, muscular, or inter-osseous fibres, not cut through, are then to be divided, and the linen retractor run between the bones, which are to be sawn across at the same time. All pressure being taken off, the tendons and the vessels, if long, are to be cut short, and the latter to be tied, after which the flaps are to be brought together by sutures, and retained by sticking-plaster, compress, and bandage.

§ When the operation is to be performed above the middle of the arm, it may be done by the *circular* incision.

The arm being placed with the thumb uppermost, an assistant should retract the integuments as much as possible, whilst the operator makes a circular incision through them. They are then to be drawn up for nearly an inch. The muscles on the inside of the arm should be divided by one slanting cut down to the bones; and then those on the outside. The bones are to be cleared by cutting through any muscular fibres attached to them, when the interosseal ligament should be divided, and the linen retractors passed between the bones, which may then be sawn through at the same time without difficulty. The stump is to be dressed in the usual manner. The operation may be done by cutting through the integuments and muscles at once in an oblique manner, until the flaps thus formed shall be sufficiently large to make a thick cushion over the ends of the bones.

§ *Amputation at the wrist,* or the joint of the radius and ulna, with the first row of the bones of the carpus, has been recommended by some surgeons as preferable to the amputation above the ends of the radius and ulna. The hand being placed midway between pronation and supination, the soft parts are to be divided by a circular incision, beginning from half an inch to an inch below the ends of the radius and ulna. The integuments being turned up without the tendons, they are to be divided, and the joint is to be opened into before the spinous process of the radius; and, whilst the hand is pressed down, the knife should divide all the soft parts, and separate the carpus from the radius and ulna. The wound is to be closed by sutures in the usual manner. When a circular incision cannot be made, in consequence of the nature of the injury, and this operation is still preferred, a covering for the bones must be obtained where it can be procured, by one or more flaps.

§ *In all injuries of the hand,* the value of a thumb and a finger, or of two fingers, or even of one, should be borne in mind, and no part should be removed that can be saved, and appears likely to be of use. When cannon-shot, large splinters of shells, or grape-shot have struck the hand, amputation will often be necessary, but the foregoing precept should never be forgotten.

A musket-ball fairly passing through the hand generally fractures two metacarpal bones, although a small ball may pass between without breaking either. The wounds should be enlarged, and the broken ends of the bones sawn off, or the splinters removed, and the points of bone smoothed off, the tendons to be carefully preserved, and vigorous antiphlogistic measures adopted. The tendency to tetanus or trismus will be best obviated by such measures, the incisions when necessary, being made in the direction of the bones and tendons. Any hemorrhage which can ensue will be readily commanded by ligature, by torsion of the vessel, or by a small graduated compress and bandage, when these are inapplicable.

§ When one or more fingers are destroyed, and the metacarpal bones injured, they are to be sawn or cut off, but not removed at the carpus, although an opening into the joint of the carpus will generally do well, if skin can be saved to cover it. In all cases of amputation of one or more fingers, the metacarpal bones, if injured, should be left as long as possible, and particularly that of the index-finger, when the thumb remains. In all cases it is better, if possible, to leave the heads of the metacarpal bones in their places, rather than open into the joint of the carpus, if it can be avoided. If the articulating heads must come out, a strong, thin scalpel is to be pushed in between the bones, the ligaments cut through above, below, and at the sides, and care should be taken, in removing one or two of these bones, not to dislocate the others, and the joint should be covered by a flap or flaps made for the purpose, the sides of the remaining fingers being covered in a similar manner. This succeeds admirably, when the two outer bones and fingers only are taken away.

§ *The phalanges* of the fingers may be removed by making a flap from the upper or under part, or from both, or from the sides. The square flap from the upper part of the finger is preferable, when the joint with the metacarpal bone is to be operated upon, the commencing points of the flap being united by a transverse incision on the under part of the joint. It should be recollected, that in all these incisions the larger end of bone belongs to that which is not removed, as may be shown by bending the finger; and that the ligamentous attachment between the metacarpal bones, connecting a middle one to its fellows on each side, should be cut through, when the joint will be easily dislocated. Attention should be paid to the division of the lateral ligaments in the removal of any of the bones of the fingers.

Professor B. Langenbeck has operated in some instances, and he says successfully, without the loss of the finger, by sawing off, in the first case, the articulating ends of the first phalanx and of the metacarpal bone of the fore-finger, in consequence of an injury from a rotating piece of machinery; in another, the ends of the first and second phalanges of the middle finger after a severe laceration; and in a third case, by sawing off the end of the second phalanx, and removing the whole of the bone of the third of the fore-finger from the soft parts, leaving the nail; the man recovering with a shortened but useful finger. In all these cases the flexor and extensor tendons were from the first uninjured.

M. Langenbeck has also removed the metacarpal bone of the thumb; a new bone as a substitute being subsequently formed in its place, although the periosteum had been removed with it, which, however, he is always desirous of separating from the bone, and leaving behind if possible, although he does not consider its remaining in the wound to be essentially necessary for the reproduction of the bone. To do this operation, he directs an incision to be made along the whole length of the bone towards the palmar aspect, thus avoiding the tendons. Then free both articulating extremities, and separate the soft parts from the body of the bone, which is to be held firmly, and drawn outwards by a strong pair of forceps, made for the purpose, with two bent points, or long teeth, to each extremity. As much as possible of the periosteum is to be left in the wound. If the thumb were to be left to itself, it would be drawn inwards towards the palm and shortened, but this is to be prevented by a splint and apparatus to keep the thumb extended until the wound is healed. He uses a small curved knife with a square end, of the size of an ordinary scalpel, to facilitate the separation of the periosteum, when the bone is to be removed entire. It must be remarked, however, that little reliance can be placed on the means indicated for separating the periosteum from an otherwise healthy bone after an accident. When bones are softened by inflammation it may perhaps be done. —*Lancet, Aug.* 7, 1852, *p.* 117.

72.—ON SECONDARY AMPUTATIONS.

By G. J. Guthrie, Esq., F.R.S.

[These are not so successful in military as in civil hospitals, because in the former they generally take place within a short time after the primary operation, while the parts are still in a very irritable condition. Besides the inflammation of the veins and sloughing of the stump are in some degree dependent upon the season; viz., the autumn, in which military operations are usually conducted.]

§ In secondary amputations in parts which have partaken of the extensive irritation which accompanies the original injury, a larger portion of the flaps will require to be preserved, although the integuments and muscles cannot be said to be unsound. In other words, the bone must be cut shorter, or the stump will be conical and bad, and particularly if sinuses containing pus are found to run up between the muscles, or between them and the bone itself—a state very likely to give rise subsequently to caries.

In sawing the bone it may be again stated, the point of the saw should incline downwards, and when two-thirds of the bones are divided, it should be made to cut perpendicularly, whereby the *side* next the operator is the last part divided; and the hazard of splintering the bone at that moment will be avoided, particularly if the limb to be removed is held with great steadiness.

§ In secondary amputations, twice, nay three times the number of arteries will bleed as in primary ones. In the thigh, the femoral artery should be drawn out with a tenaculum or spring forceps, and tied firmly with a single thread of dentist's silk, one of the two ends being cut off close to the knot. The smaller the vessel, the smaller the thread required. Torsion or twisting the smaller vessels, so as to rupture their inner coats, answers very well in cases in which many small ones bleed. When a nerve is known to accompany an artery, it should be carefully separated from it.

§ If bleeding should continue from above the ligature on the extremity of an artery, it is generally caused by some small branch given off from it, and which has been cut so close to the trunk of the vessel as not to have been observed. In this case the artery itself is to be drawn out by the tenaculum or spring-forceps until the bleeding point can be seen, and a ligature placed above it, when the piece below should be cut off with the first ligature applied. This inconvenience will be in general avoided by taking care to divide the principal artery at one stroke of the knife, and with it half an inch at least of the surrounding substances, if the operation is done by the circular incision. If by flaps, the extent of the exposed arteries should be carefully examined, and the ligatures applied at the highest point of exposure, when all below should be removed.

§ When a tourniquet is used, and applied too close to the incised parts, it often prevents, even when loosened, the principal vessel from being found, from having pressed on the ends of the muscles. If one is used, it should be removed as soon as possible after the principal artery has been secured. The repeated tightening and loosening of the tourniquet will cause more vessels to bleed in the end, and more blood to be lost, than if it had not been used, and it ought not to be resorted to when good assistance is procurable. In cases of this kind, in which the stump may not cease to ooze, the circulation being good, and sponging with cold water is not effectual, the wound should not be finally closed for two, four, or more hours, until the oozing has ceased, and the parts can be freed from the coagulated blood, and brought together.

§ In cases in which union is not expected to take place, both ends of the ligatures should be cut off; for union is not to be desired of the external parts in many instances of secondary amputation, particularly after serious injuries; the inflammation consequent on which has in some degree implicated the structures divided in the operation, rendering them less liable to take on the healthy action of adhesion. The soft parts should be simply approximated by two or more sutures, the edges of the wound having a piece of lint between them. This precaution should be particularly attended to after a great battle, when it is perceived that from the air, the crowded state of the hospital, or the season of the year, the stumps, although they may appear to unite in the first instance externally, do not in reality do so internally.—*Lancet, Aug.* 28, 1852, *p.* 187.

73.—*Amputation at the Ankle.* By Prof. Syme, Esq.—[Prof. Syme states that he has performed this operation fifty times without any mortification of the flap. He makes this statement on account of a letter which he received from a former student of Edinburgh, now in London. Prof. Syme says:]

He tells me that about ten days ago he saw the professor of surgery at King's College perform amputation at the ankle, with commendation of its merits, notwithstanding the risk of sloughing, which he seemed to regard as nearly inevitable; and "strange to say," writes my informant, "on visiting the patient a few days afterwards, I found that the flap had sloughed." In explanation of this result, so different from what he had been accustomed to witness here, he mentions that the operation was performed with complete disregard of a point which I have always believed and represented as essential to success—viz., preserving entire the nourishing vessels of the flap. It is plain that these can only be the anastomosing branches of the integuments; and it is equally clear that cutting at a right angle with the surface must certainly divide them. But it seems that the King's College professor effects disarticulation before he detaches the flap, and therefore *must* apply his knife in this objectionable direction. In representing amputation at the ankle as easy, safe, and free from any risk of sloughing, I understood the operation to be performed in the way recommended; and for the effects, whether immediate or remote, of modifications in the procedure introduced by others, I am of course in no wise responsible. The matter being now explained, I trust that sloughing in London will no longer be considered any disparagement to the success which has attended the operation in Edinburgh.—*Monthly Journal of Med. Science, July*, 1852, *p.* 37.

74.—*Case of Amputation of Little Finger; dangerous symptoms manifested after the Administration of Chloroform; resuscitation by Galvanism.* Under the care of JOHN HILTON, Esq., F.R.S.—[In this case of danger arising from inhalation of chloroform, excitation of the diaphragm proved most valuable. The patient, a female, aged 29, had been for the last ten years subject to attacks of syncope. Having had, on the 16th June, a piece of necrosed bone removed from the fifth metacarpal bone of the left hand, she was sent into the country for the benefit of the pure air. She returned, however, on the 16th July, with the bone in an active state of disease.]

On the 26th of July, at half-past one P.M., the patient (at her own express wish) was placed under the influence of chloroform, of which three drachms were given. She had had her bowels relieved by medicine, and had only taken beef-tea for dinner. The whole of the metacarpal bone has then removed, with the exception of a small portion at the carpal extremity, which was left, to preserve the integrity of the carpal joints. At the completion of the operation, during the performance of which scarcely any blood was lost, the patient manifested perfect consciousness, and answered questions slowly but correctly. As she felt comfortable, and was expressing a wish to walk back into the ward to her bed, and not be carried, she was assisted by two attendants whilst rising from the table; but no sooner did she gain the erect posture than she fell back into the arms of those who were supporting her, and relapsed into a state of insensibility. The pupils were now minutely contracted; the expansion of the chest almost imperceptible; the respiration feeble, slow, and labouring, and chiefly effected by the diaphragm; the pulse 60, feeble, irregular, and unequal in the force of its beats.

Doors and windows were immediately opened, cold air admitted, and thrown in currents across the patient's face by fanning; cold water was dashed upon face and chest, by which an occasional sighing inspiration was excited. Brandy and cold water were freely given, and strong ammonia applied to the nostrils. These means increased for a time the force and frequency of the pulse and respiration; but the insensibility and minutely-contracted pupils remained unchanged. Respiration was now aided by compressing the sides of the chest, with the palms of the hands firmly applied, during the act of respiration, but without satisfactory results.

Notwithstanding the continuance of the above-mentioned means, the circulation remained feeble, slow, and unsteady, the respiration progressively diminishing in force and frequency, this decline being associated with a corresponding decrease of the temperature of the whole body.

After a trial of two hours and a half of the remedies just described, as the danger was becoming imminent, the galvanic apparatus was procured, and shocks were passed over the chest and top of the spine, at the origin and insertion of the phrenic nerves, and continued during two or three minutes. This produced the happiest results, as evidenced by the following change in the symptoms:—

The patient raised her body from her bed, sighed frequently and profoundly; a general tremor, of about a minute's duration, ensued, at the end of which she opened her eyelids, complained of pain and fulness in the head, answered questions correctly, and when asked whether she suffered pain during the operation, replied that she had felt none until the ligatures were applied; pulse now 116, full, much stronger; pupils natural.

There was a tendency to relapse into a state of insensibility after the use of the galvanism; but the occasional dashing of cold water on the face, together with the internal administration of the same fluid, appeared to prevent a recurrence.

For a week after the operation, the patient complained of great fulness in the head, and cephalalgia, which considerably disturbed her night's repose. The operation has been perfectly successful; and on the 17th July, one month after admission, she was presented cured.

This case is intended to illustrate the occasional danger attendant on the administration of chloroform, when there is a want of right proportion between the configuration of the head and the general circulation; or, at least a temporary functional disturbance in the balance of the circulation. The details of the treatment exemplify, in a most striking manner, the utility of galvanism or electricity, in such cases, as a resuscitative agent.

The galvanic shocks had not only the effect of producing a marked improvement in the pulse and respiration, but they also produced dilatation of the pupils and complete return of consciousness. That the galvanism deserves the credit of effecting resuscitation cannot be doubted, from the fact of the previous remedies having proved ineffectual, and from the speedy recovery immediately upon its administration. This case is further interesting, as showing that the tendency to relapse into a state of insensibility, from the secondary effects of chloroform, bears a striking relation to the same phenomenon resulting from a poisonous dose of opium. We also see the necessity of carefully watching patients for some time after the restoration to consciousness has been accomplished.—*Lancet, July* 31, 1852, *p.* 103.

75.—*Case of rapid Necrosis of the Tibia*; *Amputation above the Knee.* Under the care of J. Avery, Esq., Surgeon to Charing Cross Hospital. —[The operation in this case was performed after Mr. Luke's plan.]

Mr. Avery made first an ample flap posteriorly by piercing and cutting from within outwards; he then made an equally large flap anteriorly, *not* by piercing and cutting as was done with the posterior flap, but by carrying the knife in a curved direction, antero-posteriorly through skin and muscles, down to the bone. The exact shape of the flap can thus be distinctly delineated, and made with great regularity, exactly of the size best calculated to make a good stump. The appearance of the latter immediately after the operation, showed very forcibly the advantages of this method, as the two flaps formed at once a symmetrical thick and clean cushion for the bone. Nor did the appearance of the stump, when cicatrization was complete, prove less satisfactory. A fortnight after the operation there was only a very slight discharge at the angle of the wound, the latter having almost all healed by first intention. One month after the amputation, the stump was as round as a ball; it offered a perfect model of its kind, and Mr. Avery expressed the opinion that it was quite impossible to get so ample and good a flap anteriorly, by the ordinary method of transfixing and cutting from within outwards, as had been obtained in this instance by Mr. Luke's method.

The objection sometimes brought against the ordinary flap operation, and which would hold good against Mr. Luke's, is that the wound made by the knife is much more extensive than is the case with the circular amputation. But as with chloroform we have no shock, and since the amount of the suppuration is pretty well the same in both operations, the objection falls to the ground; the more so as it is proved that when the flaps are well made after Mr. Luke's plan, there is much chance of union by first intention, and the immense advantage of a firm, round, and healthy stump.—*Lancet, Aug.* 28, 1852, *p.* 193.

76.—*Case of Gangrene of the Foot from Exposure; Amputation of both Legs; Recovery.* Under the care of S. SOLLY, Esq., Surgeon to St. Thomas's Hospital.—[Senile gangrene is well understood both in its pathology and treatment, but any observations upon gangrene attacking the extremities of the young, may be of advantage. In the young, the pathology seems to be obliteration of the arterial trunks. In the old it is from ossification of the vessels.]

How is the obliteration brought about in the young? Mostly, if we do not mistake, as a consequence of arteritis, the vessel becoming plugged up with the fibrinous exudation excited by the inflammation of its coats. And here some analogy is seen to exist between gangrene of the feet and softening of the brain; for in both cases does the disoganization of the whole or a portion of the part affected, depend upon a diminished or totally arrested supply of arterial blood.

But a new field has, on this head, been lately opened by Dr. Kirkes, who has submitted his views to the Medical and Chirurgical Society, in a very important paper, on the 25th of May, 1852, (the Lancet, June 5, 1852, p. 542.) Dr. Kirkes thinks that by actual cases, post-mortem examinations, reasoning, and analogy, he has established that—" 1st. Fibrinous concretions on the valves of the heart admit of being readily detached during life. 2nd. That if detached and transmitted in large masses, they may suddenly block up a large artery, and thus cut off the supply of blood to an important part. .... 3rd. That the effects produced and the organs affected would be in a great measure determined by the side of the heart from which the fibrinous material had been detached; if from the right side, the lungs would bear the brunt of the secondary mischief; but if, as was most commonly the case, the left valves were the source, the mischief would be more widely spread, and might fall *on any part,* but especially on those organs which were largely and directly supplied with blood from the left side of the heart, as the brain, spleen, and kidneys." We do not allude to Dr. Kirkes' ideas as to the possibility of phlebitic and typhoid symptoms being excited by the fibrinous *débris* getting into the circulation; for we desire to centre our attention upon the subject in hand, and inquire whether the plugging of the main arterial branches of the lower extremities might not sometimes be occasioned by fibrinous masses derived from the heart, independent of ossification or arteritis.

If Dr. Kirkes' theory be admitted, as regards the brain, spleen, and kidneys, it may without violence be extended to the distal portions of the lower extremities, the more so as Dr. Kirkes has found, in some of the cases which are mentioned in the paper, the iliac arteries firmly clogged. Though these very ingenious views are not yet supported by actual proof, they certainly deserve the attention of the profession, both as to the important effects suggested by the author, and as bearing upon the disease under consideration—viz., gangrene of the feet in young subjects. Dr. Kirkes deserves great credit for his patient labours, and it will be as well when we come in contact with cases like the one which he relates, to inquire minutely into the history of the patient, dwelling especially on the rheumatic or cardiac affections which he may have experienced.

The treatment of spontaneous gangrene in the lower extremity seems completely settled, and all surgeons agree that it is proper to wait until a line of demarcation is formed, so as not to run the risk of having a stump with diseased arteries. But we have seen in some instances, the sphacelated parts ulcerate away completely, and the stump formed without the intervention of the surgeon's knife. There is, we fear, a certain amount of risk in adopting this course, for the long process of separation between living and dead portions of the limb lays the patient open to that fearful complication known under the name of purulent absorption. Nor is this all, for the noxious gases resulting from decomposition may be very baneful, both to the patient himself and to his fellow-sufferers in the same ward, and thus do incalculable mischief. The surgeon has therefore to use his powers of discrimination—and seize upon the moment when the line is sufficiently marked to leave no doubt upon the soundness of the vessels above, and amputate a little beyond the ulcerated points.—*Lancet, June* 19, 1852, *p.* 590.

ORGANS OF CIRCULATION.

77.—ON TREATMENT OF WOUNDS OF THE PALMAR ARCH.

By Richard G. H. Butcher, Esq., Surgeon to Mercer's Hospital, Dublin, &c.

[From the writings of Sir Astley Cooper, we find that in cases of this kind he recommends steady and continued pressure on the brachial artery. If this fails, he says it may be necessary either to secure the radial or ulnar artery or both. Mr. Liston recommends us to enlarge the wound, and tie the vessels divided above and below. If inflammation and sloughing come on, then the humoral must be tied; because if both the radial and ulnar are secured, bleeding will still continue from the interosseous communication. Mr. Skey's opinion is, that the trunks of the radial and ulnar should be tied above the wrist. This was the opinion of Mr. Abernethy also. Mr. Butcher now draws attention to a case which came under his care. It was that of a strong athletic man, aged 30, who was admitted into the hospital June 6th, 1852, bleeding profusely from the right hand. The wound was inflicted by a penknife, which had been thrust deep into the palm,—three-quarters of an inch internal to the cleft between the thumb and index finger. Mr. Butcher proceeds:]

I was in the hospital when the patient was admitted; he was then evidently losing a large quantity of blood; he was blanched and excited. Before removing finger pressure from the wound, I directed an assistant to make pressure on the radial and ulnar arteries above the wrist. On exposing the cut, the blood issued, not in a jet, as in the first instance, but in a rapid continuous stream, of a bright scarlet colour. On drawing aside the lips of the wound, the bleeding extremities of the vessel could not be seen at all; the finger of a second assistant was again placed so as to act temporarily on the bleeding artery, and I proceeded to treat the case by pressure. Each finger was separately rolled with a narrow bandage from its extremity to its articulation with the metacarpal bone; the thumb was similarly treated; then, even, flat compresses of folded lint were adapted to every part of the palm of the hand, excepting to the extent of a half-crown piece, the centre of which was the wound; this space was left for special pressure, and applied in the following way:—The finger being cautiously removed from the divided artery, a very small dossil of lint was pressed into the wound so as accurately to take its place; over this another and another, each larger than the former one, until a well-adapted conical compress not only filled the wound with its apex, but was elevated by its base a few lines above the surrounding integuments. When so adjusted, not the slightest oozing appeared; a roller was then put on so as to steady and maintain the compresses in the palm, and carried up to the wrist, where an oblong compress of lint was placed over the radial artery, and a similar one over the ulnar vessel, and retained with such force as to moderate, but not to arrest, the amount of blood circulating in these vessels. The same roller was continued up to the elbow, maintaining all along equable support. A splint was then adjusted along the anterior aspect of the limb, and retained by bandage, extending from the elbow above to the anterior extremity of the first phalanx of each finger; it was wide below, so as to give the entire hand support, at the same time it was padded in a peculiar way, the wadding being much thicker, and presenting a convex surface, to fill up effectively, together with the compresses already applied, the hollow of the hand. By this adjustment the fingers were slightly flexed—a position most desirable, as relaxing the inferior attachments of the palmar aponeurosis, and permitting the compressing pad to lie undisturbed by direct contact with the cut artery. The patient was confined to the horizontal posture in bed, with the limb well raised.

[After enlarging upon the advantages of this position in cases of these and similar injuries, Mr. Butcher continues:]

June 7th, ten a. m: There has not been the slightest oozing of blood from the wound; neither is there pain nor tension referrible to any part. The patient had a full opiate on last evening, and afterwards quiet rest through the entire night.

9th. There has been no return of hemorrhage, and the hand is free from pain.

10th. Removed this day the splint and bandages, save those applied to the fingers; also the graduated compress, except the dossil of lint which constituted the apex of the cone, and which lay in the wound, adherent. You must bear in mind, even this scrap of lint was not tinged with blood externally. It was suffered to remain undisturbed, for the slightest force offered to it would be capable of tearing open again the recently agglutinated vessels. The compresses over the radial and ulnar arteries were not stirred, the object of their application being as you already understand, to diminish the weight of the column of blood thrown upon the divided extremities of the artery. The compresses in the palm, the splint, and bandages were all replaced, with a pressure equivalent to that used in the first instance.

12th. Permitted the patient to sit up, and move about the ward, with the limb supported in a sling.

18th. Reapplied bandages, splint, and the compresses in the palm as before; left undisturbed the piece of lint in the wound, it being still adherent; adopted a like precaution as on the 10th, of not disturbing the pads over the radial and ulnar arteries.

22nd. Removed the compresses from the palm of the hand, and this day detached the piece of lint, which adhered so pertinaciously in the very bottom of the wound, by a continuous stream of tepid water directed upon it for a few moments. The radial and ulnar pads were not taken away. After this a light compress was again placed over the wound, the fingers left bandaged, and the pads supported by splint and rollers as before.

25th. Removed all dressings to day; the wound quite healed; the compresses over the radial and ulnar arteries were dispensed with, as likewise the finger bandages. Merely put on a small compress over the wound, and steadied the limb on a splint as before.

29th. Removed all dressings, and dispensed with all further applications; motions of the hand unimpaired.

This case, then, affords a good example of what can be accomplished by compression. In order to have it effectual, there are certain essentials upon which I would lay great stress; and *first*, the relaxation of the palmar aponeurosis. Most of you are aware of the resistance and density of this structure, and how completely it covers in, secure from displacement and from pressure the complicated and delicate arrangement of parts lodged in this region, the superficial and deep arches of arteries and nerves, the minute ramifications of veins, together with the superficial and deep flexor tendons enveloped in their fine synovial bursa, how that this fascia is intimately attached above to the anterior annular ligament, and in fact constitutes its superficial layer, and has fused into it the tendinous insertion of the palmaris longus muscle. Passing from this origin, and expanding as it closes in the palm, it gives off a fascia from its outer margin to cover in the muscles of the thumb, while from its inner is detached a similar process to invest the muscles of the little finger; while inferiorly, it divides into four fasciculi, which split, each becoming forked and inserted into either side of the sheaths of the flexor tendons and into the capsular ligaments of the first phalanges. These diverging slips are held together by transverse aponeurotic bands, which prevent their divarication. Sent off from its deep surface are two strong septa, which join the interosseous fascia, and isolate the middle of the palm from the internal and external lateral portions. The superficial and deep surfaces of the palmar aponeurosis are strikingly different; the superficial surface is rough and uneven, owing to the detachment of tendinous fibres to the thickened and hard skin covering it, and to the compact and granular fat interposed, and which must be borne in mind as considerably embarrassing the surgeon and forming one of the difficulties to be encountered in securing the ulnar artery below the annular ligament. The deep surface of the palmar fascia, on the contrary, is polished and shining, with a thin layer of fine reticular cellular tissue lying between it and the subjacent parts, and which must be remembered as affording an arrangement most susceptible of infiltration. You can understand now, from the anatomy of the fascia, the necessity of slightly flexing the fingers, so as to relax it, and thus permit the first bit of the compress to be placed effectively in contact with the divided artery. By this relaxation a comparatively slight amount of pressure will stay the current from the bleeding vessels. You readily perceive that, by extending the fingers, the fascia is made tense and must lift up the compress, thus allowing the blood to pass into the fine reticular tissue and engorge the hand. *Secondly,* in order that pressure should succeed in other cases as satisfactorily as in the one before us, besides relaxation of the palmar fascia, it must be had recourse to early, before any obstacle in the way of clot is interposed between the bleeding artery and the compressing agent. It must be employed evenly over the entire limb, maintaining an equable support from the extremities of the fingers to the elbow. The stream through the radial and ulnar arteries must be diminished in volume by compressing their walls in the manner you have seen, and the elevated position of the limb must be maintained for the reasons which I have already assigned. I have mentioned to you that I visited the patient in a few hours after applying the compression, and with what object?—to see if the compress was at all stained with blood. If so, I would have removed at once all the dressings, I would not employ pressure again, being impressed with the conviction, that it was put on as accurately as could be, and had failed in the trial; and I would not risk by repeated hemorrhages the engorgement of the hand and the alterations of the natural appearances of the parts. I would have dilated the wound, and tied the artery above and below. You can dilate the wound without injury to the parts lodged in the palm of the hand—that is, when the superficial arch is the part implicated, by the following method. It is a mode which you have frequently seen me practise in cases where matter has formed, either in this region or in the sole of the foot. You take a director and bend the lower two inches of it in this manner, pass it into the wound (or in the case for the exit of matter make a small opening for it), and having got beneath the fascia, press the point of the instrument close up to its under surface, so as to lift as it were the fascia from the parts behind; a very slight onward movement will separate the cellular tissue, and nothing is interposed between the groove of the director and the fascia, so that it can be easily slit upwards. The director may then be applied in a similar way in the direction of the lower extremity of the artery, and the knife used. The edges of the wound thus formed can be readily drawn aside, and the cut extremities of the vessel will with facility be secured. Now this is not the case when the surgeon makes a direct incision from without down on the bleeding artery; parts are very frequently cut which should not be, and add very considerably to the difficulties of finding the vessel. I, too, like Mr. Skey, have seen an experienced surgeon baffled in his attempts to tie the bleeding points by direct incision, and compelled to secure the radial and ulnar vessels.

The size of the wound will very materially influence the mode of practice to be pursued. If a large one, I would have you at once proceed to secure the cut extremities of the artery, and still further, even dilate, to accomplish this object; for if the parts in the hand are extensively injured, the additional incisions required by the surgeon, in most cases, will be but trifling, and not tend more seriously to compromise the result, in regard to the after functions of the part. Again, pressure cannot be depended on with the same certainty when employed over a large wound: sloughing and secondary hemorrhage are almost sure to follow.—*Dublin Medical Press, July* 14, 1852, *p.* 17.

78.—*On the Treatment of Epistaxis.* By M. REVEILLE-PARISE.—M. Reveille-Parise observes that it is very desirable to be in the possession of a simple means of arresting epistaxis when severe. Plugging is not the simple operation it has been described; it is very tedious, and often excites vomiting or sneezing, which aggravates the bleeding. Moreover, we may not have any appropriate instrument at hand.

He has found three means of great utility:—1. Alcohol, applied upon dossils of charpie, is a most energetic styptic. It causes a strong or even a temporarily painful sensation, and often speedily checks the the bleeding. The essential point is, before passing in the alcohol, to dry the nostril well by blowing the nose, and by charpie. 2. Equal parts of powdered gum and alum may be blown into the nares, and dossils rolled in the mixture then applied,—a magma, which arrests the hemorrhage being speedily formed. Before removing the dossils, they require to be well moistened with tepid water when the bleeding has quite ceased. 3. The best of all means is, however, the application of carded cotton-wool; and it is surprising that surgeons have hitherto made so little use of this hemostatic agent. After the nostril is well dried, dossils of pure clean cotton should be passed in, until it is filled. They must not be too tightly rolled, or the blood cannot penetrate the interstices,—nor too loosely, or it will do so too easily, and the hemorrhage will continue.—*Bulletin de Thérap.—Medico-Chir. Review, Oct.,* 1852, *p.* 547.

79.—SPEEDY CURE OF A LARGE ERECTILE TUMOUR OF THE NECK, BY INJECTION OF AROMATIZED WINE.

By Prof. Riberi.

At the Scientific Congress, which met at Turin, in 1840, Dr. Riberi made a communication respecting the great benefits he had derived from vinous injections, in erectile tumours or *nævi materni.* He preferred these to any other substance that had been recommended as an injection. Although in the case of large tumours the injection had to be repeated at intervals, in different parts of the tumour, yet the cure was effected with little pain, and without leaving a cicatrix. The chief inconvenience was the length of time required; so that the ligature, excision, or caustic, might be preferable whenever the tumour had a large base, and the deformity left was not visible. Where this last was to be feared, as on the face, the injection was preferable. On many occasions, injections have been employed with success, when the whole substance of the lip was implicated; but in other cases, the ligature has proved just as useful, and more expeditious. Soon after the injection, the tumour becomes reddened, and the seat of a true phlegmon, which is, however, of short duration, and gradually subsides, the skin recovering its colour, though never assuming quite the natural condition. After this change in the tumour, the surgeon may be certain that it will not continue to increase; and it has lost the spongy or cellulo-vascular disposition, which was one of its chief anatomical characters. Sometimes the inflammation proceeds beyond the adhesive stage; and ulceration, which delays, but does not prevent, the cure, takes place. In some large tumours, the conjunction of other measures, as the partial ligature, caustics, &c., with injection, has been found useful. Since 1840, Professor Riberi has treated many other cases with the vinous injection, and with increased confidence in its efficacy. He selects one of these for narration, as being the most striking example he has yet met with, from the deep extension of the tumour, and the rapidity of its cure.

Maria Cedrino, æt. 46, a countrywoman in robust health, applied at the clinic on account of a tumour on the right side of the neck. It was the size of a turkey's egg, colorless and painless, and its base penetrated amidst the muscles and large vessels of the neck. By uniform pressure it could be made to disappear, re-appearing again gradually when this was removed. It had remained stationary for some time, when a quack having punctured it, hemorrhage ensued, to arrest which the actual cautery was required. Since then it had much increased in size. After steadying the neck and the tumour, this was punctured at its centre, by means of Anel's syringe, having the pipe-needle so shaped that it might readily penetrate, and wine aromatized by aromatic herbs was injected. The tumour at once became tense and hard, and bladders of ice were laid upon it. Considerable inflammation followed, so that a bleeding was deemed necessary. By the use of the ice and a low diet all this subsided, and the tumour rapidly diminished in size — so that by the seventeenth day it was no larger than a pea, and the patient was dismissed. She was seen a year after, and continued quite well.

In a note appended to the case, Professor Riberi takes a comparative view of the different procedures adopted for the treatment of erectile tumours. 1. The practice of tying the arteries supplying the tumour with blood, and thus arresting its nutrition, has been declared useless by the general experience of surgeons, except in the case of erectile tumours in the cavity of the orbit, and perhaps of the temple. 2. Other modes, as vaccination, acupuncture either simple or with heated needles, injections, issues over the tumour, and the seton, act by inducing inflammation, which changes the anatomical characters of the texture in the tumour, and leads to its resolution. Vaccination, however, only answers this end in very small tumours, and its sphere of action is therefore very limited. By acupuncture practised with many needles, a cure is not always obtained, and when it does result, it does so only after a very long period; and the practice of employing heated needles has not succeeded in the author's hands. Of injections he has already stated his favourable opinion. Issues applied over the tumour produce no effect, or only after a very long period. Nearly the same may be said of the seton, while from the use of this means, the author has known excessive inflammation and febrile reaction to result. 3. Other modes, as compression, and to a certain extent, astringents, accomplish the *denutrition* of the tumour by causing expulsion of the blood and adstriction of the vessels. Compression, however, by inducing some inflammatory action, operates in a mixed manner. Astringents are of little efficacy, and act as mere adjuvants to other means. Compression is long and tedious in its operation, difficult, and often impracticable in application, and always uncertain in its result. In one case Dr. Riberi employed it with great advantage, before he was aware of the utility of injections. It was an erectile tumour, which spread out from the orbit of an infant over the forehead. Pressure was continued for a year and a half, with the effect of quite dissipating the tumour, and wearing down in part the superciliary ridge, which, however, was restored to its usual appearance in three months afterwards. 4. Another mode is the minute breaking-up of the intimate tissue of the tumour by a cataract-needle, and then employing pressure and astringents to secure its dispersion. The facts are too few to allow of an opinion being delivered upon this method. 5. Finally, other modes, as excision, caustics, and the ligature, have in view the extirpation of the texture. Excision is the most speedy means of effecting this; but the fear of hemorrhage, so alarming at the tender age at which these tumours usually occur, deters most practitioners from its adoption. Of the efficacy of both the actual and potential cautery, the author has had many opportunities of assuring himself; but the ugly scar they leave behind constitutes a great objection to their use. The ligature is much more extensively applicable. Of 28 cases occurring in 8 years, Dr. Riberi applied it with complete success in 25. In treating nævi with a broad base, instead of employing a double ligature, so as to tie each half of the tumour with one of these, the base of the tumour may be transfixed by two needles placed crosswise, and a circular ligature applied beneath them, they serving as points of support for it. In place of the needles, Dr. Riberi has been accustomed to employ here, as also in tying hemorrhoids, two strongly-curved hooks. It is surprising how much more readily the operation is performed by their aid, especially when the tumour is situated within the cavity of the mouth. In those cases in which the erectile tumour has a long, narrow base, the quilled suture may be employed with great advantage. There are, finally, certain erectile tumours, which, from their position or size, require to be treated by two or more of the above-mentioned means.—*Medico-Chir. Review, Oct.,* 1852, *p.* 449.

ALIMENTARY CANAL.

80.—ON A CASE OF COMPLICATED HARE LIP, AND THE METHOD OF TREATING IT.

By Richard Quain, Esq., F.R.S.

[The operation was conducted with few exceptions in the ordinary way, but Mr. Quain derived essential assistance from the supporting spring, which has lately come into use.]

This encircles the head from behind, and the two ends, furnished each with a pad, rest upon the cheeks, which are thereby supported in the position given to them. All dragging or stress upon the sutures is thus prevented; and pressure upon the lip, whether from the bones behind or otherwise, is guarded against.

This object is so important in such a case as that now under consideration, that a few more words respecting it will not be out of place.

Very many years have gone by since the need of support to the cheeks in aid of the suture in treating certain cases of hare-lip was perceived by surgeons, and attempts were made to effect the object. The bandage variously disposed was generally resorted to; but other expedients were likewise used. Several of these are noticed in the "Memoirs of the Academy of Surgery" of France; and in one of the essays in that most valuable publication it will be found, that an able surgeon, Louis, went so far as to put aside the pin as the means of union in hare-lip, substituting for it a systematically arranged, and not a little complicated, "uniting bandage," with, however a single point of thread suture. This system fell rapidly into disuse, but the bandage was still continued in aid of the twisted suture, especially by continental surgeons. The bandage was made to encircle the head and face, crossing from the occiput alternately upon the lip and forehead, and supporting compresses upon the cheeks. It is well represented *in situ* in Desault's Journal. In one case Dupuytren included the nose likewise in a slit of the band. (Lecons Orales, T. IV., p. 102.) But the bandage is liable to the serious objection, that pressure is made thereby upon the lip, and that discomfort is occasioned by interference with the nose and the mouth. These objections do not apply to the spring; and I may observe, that the advantage of such a means of supporting the parts did not escape our predecessors. More than a century ago (1721) an apparatus of that kind was recommended by a practical surgeon. (See "Verduc Traite des Operations de Chirurgie," p. 218.) The suggestion in this treatise is to place the spring above the head, with the ends resting upon the cheeks. The use of this instrument was, however, objected to by several of the leading surgeons of the last century, and it fell at once into disrepute, although the objections appear to have been merely theoretical. (See, among others, De la Faye, "Mem. de l'Acad. de Chirurgie." Tome I., and Le Dran, "The Operations of Surgery," Gataker's Translation, p. 345.) Yet the thing itself seems obvious enough. Heretofore, I myself, before I had seen Verduc's proposition, applied to more than one surgeons' instrument maker to construct a spring with a view to another difficult case; but they did not succeed in making a useful instrument. The original of the spring used in the present case was constructed for his own child, a few years ago, by an artizan whom you have seen from time to time in the hospital. He had, be it observed, the object to be attained constantly before him, as well as the model for trying the effect of the apparatus; and he succeeded remarkably well, without too, I believe, any suggestion save from his own observation and sagacity. The spring constructed by this ingenious person is useful in most cases, and is of great value wherever the deformity is extensive or complicated. —*Medical Times and Gazette, July,* 31, 1852, *p.* 106.

81.—ON MATERIALS THE BEST ADAPTED FOR FILLING THE TEETH.

By William Robertson, Esq., Birmingham.

Pure and well-prepared gold leaf is undoubtedly the best and the most durable material which has yet been discovered for filling the teeth, and particularly so when the operation is performed in the early stages of decay, and before the slightest tenderness has been felt in the tooth. I should therefore recommend gold to be used in all cases where it is practicable, in preference to any other filling. But we have numerous cases which present themselves where gold cannot be used, and where an amalgam becomes a necessary substitute.

It too often happens that filling is neglected until decay has made considerable progress. The cavity having become large, the surrounding walls thin, and the tooth so tender as not to admit of the pressure necessary to condense the gold into a secure and solid plug, without the risk of producing pain or splitting the tooth.

There are also various cases arising from the position of the decayed parts, and the shallowness or saucer-shaped form of the cavity, where a gold filling would not remain, and where it becomes necessary to use an amalgam. The consideration then is, what materials are the best to form this amalgam?

I have given much time and labour to the investigation of this subject, and after numerous experiments with the various metals, have come to the conclusion that gold, silver, platina, and tin, in their pure state, are the best; because I have found in using them, either separately or combined, that they resist the acids of the mouth better than any of the other metals.

An amalgam of these, however, cannot be formed without mercury, but the smaller the portion the better, so that there shall be just sufficient to unite and hold in permanent combination the purer metals above specified.

The amalgams in general use, even those of the better class, which are composed of the metals above mentioned, contain a great deal too much mercury; and I shall presently show that the cause for this superabundance of mercury arises from the incorrect proportioning of the metals, and the improper mode of mixing them. The method generally adopted in preparing an amalgam is to combine the mercury at once with the other metals, so that the compound may be ready for using, and when a portion is required it has to undergo a process of heating and rubbing, to bring it back from its crystallized form to a pasty state before putting it into the tooth. Instead of adopting this method, the mercury ought to be kept separate from the other metals, and only mixed with them at the time of using. This mode of mixing, with the metals rightly proportioned, will produce a harder and more durable filling, and the metals will combine with *one-third* of the mercury required in the former mode of preparing the amalgam.

As an illustration of this fact, even in the better class of amalgams, I may refer to a paper that appeared in the 'Pharmaceutical Journal for March, 1850,' on 'Amalgams for Stopping the Teeth,' by Arnold Rogers, Esq. "I have much pleasure," he says, "in communicating, through the Pharmaceutical Society, a few remarks on amalgams, as well as the formula for the one I have used for some years, and though occasionally some specimens have come under my observation which seemed to possess qualities superior to the general character of amalgams, yet, on the whole, I have been satisfied with my own compound. Not but that I think it may be improved upon, and, when leisure will allow me, I shall endeavour to profit by the hints and communications of my professional brethren."

After a few remarks on various amalgams, Mr. Rogers proceeds to point out the method of preparing his own. And first, an amalgam is composed of silver one part and mercury four parts. This amalgam of silver is to be united with an amalgam of gold, which consists of gold one part and mercury three parts. These are to be kept in separate boxes, and when used the proportions are to be two parts by weight of the gold amalgam to one of the silver: thus making the amalgams, when combined, to consist of silver one part, gold two parts, and *mercury two parts.* Then as to the manner of using it. "The two pellets had better be triturated thoroughly in a mortar before the compound is submitted to the flame of a spirit-lamp; and I have observed," he says, "that for the better incorporation, it is necessary to submit to heating and trituration in the usual way three or four times. The cavity of the tooth being quite prepared for the reception of the amalgam, all the mercury that can be pressed out between the thumb and fingers should be so separated, and the compound immediately packed in the cavity,"

Now I feel persuaded that Mr. Rogers will agree with me as to the desirability of getting rid of a portion of that mercury, and I shall presently show that by using the same metals with the addition of another metal, and by proportioning them, and by preparing the amalgam differently, we shall be enabled to dispense with *seven parts of this mercury out of the ten.*

Some dentists use an amalgam of palladium and mercury, which makes a firm and durable filling, but it becomes black in the tooth. A few years ago cadmium was introduced as a filling, and for a short time it promised well, and appeared to be an improvement upon former amalgams, but after a few months' trial it showed its defects, and has very properly been discarded. It neither retained its colour nor its hardness, for when acted upon by the friction of the opposing teeth it soon wore away, and when not acted upon it became, in parts, yellow as saffron, with the disadvantage also of having a strange tendency to produce galvanic action in the mouth. Objectionable as this compound is, it still continues to be used by a certain class of practitioners, under the title of "Parisian filling." There are various kinds of amalgams used by the same class of individuals, which contain copper, lead, bismuth, zinc, and antimony, all of which are injurious. To test an amalgam properly is a work of time—a few months is not sufficient—years of observation are required to ascertain its real character and to judge of its utility. Its introduction to the public ought, therefore, to be the act of an experienced member of the profession, for it becomes rather a serious matter if we find that the filling we may have been using pretty freely for six or twelve months, upon the strength of another's recommendation, should result, like the cadmium preparation, in a complete failure.

The amalgam which I am about to describe contains nothing novel so far as the materials are concerned. There are no new metals introduced; they have all been used, in different forms, for many years, but it is in the proportioning of them, and by a different mode of preparing the compound, that I have been enabled, of late years, to get rid of two parts out of the three of the mercury formerly required; and this I consider to be an important advantage, for, as I have before said, an amalgam cannot be formed without mercury, but the smaller the portion required of this the better.

Since making this change, I have had ample time (upwards of three years) to test the merits of the compound, and can, therefore, speak practically of its utility.

The amalgam consists of gold, one part; silver, three parts; and tin, two parts; and it is of the utmost importance that the metals should be pure, free from the smallest particle of alloy.

The mode of uniting the metals, is, first, to put the gold and silver into the crucible, and just as they are at the point of melting, add the tin, which requires less heat than the former metals. When they become melted, but not over-heated, pour them from the crucible, melt them a second time, for the purpose of having them properly mixed, and then pour them into an ingot of a shape adapted for reducing the compound into the finest powder.

The mercury is to be kept apart from the powder, and mixed with it at the moment the amalgam is to be put into the tooth. The mercury must be perfectly pure, and the quantity required will be equal in weight to the powder; and here, it will be perceived, we, get rid of seven parts of the mercury out of the ten before mentioned.

In mixing the powder with the mercury, the exact proportions of each can be ascertained to the greatest nicety, and by a very simple process, which will save time and materials, and which makes a harder compound, than by using a larger portion of mercury, and squeezing part of it out again.

A measure for the mercury may be made from a square portion of ivory, by drilling in it three holes; one may be made to contain four grains, the second eight grains, and the third twelve grains. The mercury to be poured into any one of these, as more or less may be required to fill the cavity of the tooth, and by drawing the finger across, so as to bring the mercury on a level with the surface of the ivory, the portion wanted may be accurately obtained.

The measure for the powder is equally simple and convenient. It is a metal tube, with a handle attached, calculated to hold four grains, which is also got to a nicety by filling, and then drawing the finger across the mouth of the tube, so as to make level measure.

The mercury should be kept in a small bottle, with an India-rubber tube attached to its neck, and the mercury is readily passed through the tube into the measure. In this way, the exact quantity of each of the metals is readily obtained.

The powder and mercury to be emptied from the measures into a glass mortar, and rubbed till they become mixed. The compound is then to be rubbed firmly with the finger in the hollow of the hand, till converted into a paste, which, before hardening, allows plenty of time for insertion into the cavity of the tooth.

I have found this compound to be far superior to the former class of amalgams. It does not, like palladium, and some of the other metals that have been used, become black in the mouth. It retains its hardness and firmness, and is not, like the cadmium, liable to be worn away by friction of the teeth.

Formerly, in fixing artificial teeth upon a gold plate, it was necessary to avoid bringing the gold in contact with a tooth filled with amalgam, because a portion of the mercury united with the gold and injured it. This evil is now remedied by the compound containing so small a quantity of mercury, which is held in permanent combination with the other metals, so that not a particle of it is abstracted by the embrace of a gold clasp. With these important improvements upon former amalgams another advantage is, that it is used with much greater facility.

From experiments which I have made during the last twelve months, I find that the portion of mercury which I have named can be reduced still further, and which I believe will be an improvement upon the present compound; but, as I have before stated, more time and practical experience to test the result of even this alteration, is desirable, before taking the responsibility of giving it to the profession.—*Pharmaceutical Journal, June* 1, 1852, *p.* 566.

82.—ON CAUTERISING THE DENTAL NERVE.

[DR. W. A. ROBERTS, before the Edinburgh Medico-Chirurgical Society, described the following process for effecting this object. He says:]

The method of applying the actual cautery, which I have now to explain, was suggested to me by my friend Dr. Strachan of Dollar, who had seen the article in the 'Lancet,' vol. i. for 1851, p. 546, in which a proposal was made for excising tumours, &c., by means of wire brought to a white heat by electricity. I have followed up the idea; and the instrument on the table is the result. After several experiments, I found that "Grove's" battery answered best, being more convenient than "Smee's"; it is much smaller, and consequently more portable and more easily kept out of sight. By this one pair of plates I can produce a more decided result than I could arrive at with six pair of "Smee's." In the porous jar I have a mixture composed of two parts of nitric, to one part of sulphuric, acid. In the glass jar there is a mixture of four parts of water to one part of concentrated sulphuric acid. At the end of each of the conducting wires, you will observe a fine platina wire brought to a point. This wire is fine enough to enter the foramen of any tooth, and if required merely to cauterise the larger cavity of a decayed tooth, it can be easily rolled up to act as a small ball. When the wire is to be heated, the communication is made by gently pressing upon the ivory knob while pressing down the spring; the contact is made instantaneously; by taking off the pressure, the current is broken off as quickly. I found some difficulty at first in operating, from the want of elasticity in the wires, as the thickness necessary to convey sufficient quantity of the electric fluid to heat the platina wire to a white heat, rendered them very unwieldly. This has been got over very ingeniously and satisfactorily by a plan of my son's, which consists in filling two small India rubber tubes with quicksilver, the ends of the copper wires being inserted into the mercury at both ends, and tightly tied; by this means, the communication is rendered complete, and allows of free motion. Since this was done, we find now full freedom can be obtained by having a bundle of very fine wire tied together instead of a single thick one.

The advantages, then, to be obtained by this instrument are, its easy application to the desired spot in the mouth, and that perfectly cold, instead of alarming the patient by holding a red-hot iron before his face. Its being at once raised to the requisite heat, and no more than the mere point of the wire used being hot. Its being at once cooled on simply removing the finger from the ivory knob; and lastly, there being no appearance of heat to alarm the patient.

When to be applied for the purpose of arresting hemorrhage, or the deadening of the dental nerve, the cavity should be first well wiped out with a piece of lint, and then the desired spot should be rapidly touched, so as not to come into contact with other parts. This can be repeated if necessary. The platina must be at least *red* hot, as it then acts instantaneously, and with little or no pain, otherwise it would cause much pain, and subsequent inflammation. I need not say with timid persons the inhalation of chloroform should be resorted to. I have used this form of the actual cautery with and without chloroform in many cases. I may instance one case without the aid of chloroform. A young gentleman, of about nineteen years of age, came to me to have the front incisor of the upper jaw stopped; and while engaged in scooping out the decayed bone, from the great pain he was suffering (although he tried to hide it) he fainted. I made him call next day, applied the actual cautery; he felt, he said, almost no pain. The following day I stopped it with gold, and he is now quite free from any pain or uneasiness.—*Monthly Journal of Med. Science, Aug.*, 1852, *p.* 175.

83.—CASE OF STRANGULATED HERNIA.

By William Fergusson, Esq., F.R.S., &c.

[The patient, an elderly woman, was brought into King's College Hospital, on the morning of the 24th April, with strangulated hernia of the right side. Symptoms of strangulation had commenced five days previously to her admission. The taxis having failed,]

An incision about one inch and a half was made by the inner side of the neck of the hernia, by which the integument and superficial tissues were divided. Through this opening the finger was introduced upwards towards the femoral ring, when the hernia-knife was introduced, its cutting edge turned inwards, and Gimbernat's ligament was divided. A little firm pressure with the fingers was then applied to the tumour, and the hernia was reduced.

Now, I may mention, that when I first visited the patient on her arrival at the hospital, it struck me, from the appearance of the case, that the hernia could not be returned, and that an operation would be necessary. I was guided as much by the peculiar feel of the rupture, as by anything else. This was the reason why I made up my mind to operate at once, more especially as the usual measures, with the warm bath, had been tried. The patient readily consented; and under the circumstances, it was not thought necessary to wait for the concurrence of friends and relations, who often interfere very improperly, and thus, by causing delay, render a case more dangerous than it really is. If we can gain the consent of the patient to undergo an operation which is to save life, it is by no means either necessary or proper to wait for the opinion of relatives or friends, if the delay of doing so should decrease the chances of recovery. Those of you who saw the operation will have noticed that it was different from that which is usually performed and recommended by surgical authorities. It is customary, both in hospital and private practice, when operating for femoral hernia, to make incisions more or less extensive over the body of the tumour itself. These incisions are of great variety: some make them in the shape of a

Y, or T shaped, or in the form of an inverted T. Others make the incisions in the form of a cross; and, until lately, I have been in the habit of making my incisions according to the shape of an inverted Y, having found, that, by means of this incision through the integuments, I could work most easily. Sometimes, indeed, I have been contented with making only a single straight cut. Now, most or all of these incisions have been carried over the body of the hernia itself, the usual object of the surgeon being to get to the middle of the tumour, divide the integument and superficial fascia, then open the sac and look at its contents, with the view of ascertaining in what condition the intestine is. After having done this, his next step was to feel for the most resisting point, by dividing which he might relieve the stricture. This was felt to be seated at different points. Sometimes the falciform process of the fascia lata formed it; or it may have been Poupart's ligament; but most frequently Gimbernat's ligament, one or other of which it was necessary to divide before the hernia could be returned into the abdomen. The last-named structure has generally been selected on these occasions ; and in doing this you can understand that the surgeon had to pass his finger or his director deeply down before he could reach this point ; indeed he had to traverse a considerable distance with them; and during this process, it was not unfrequently found, that the intestine rose up on each side. and was liable to get wounded. Nevertheless, the operation was generally accomplished with success ; but every now and then difficulties did arise; owing to the deep situation of the particular texture, especially if it happened that the tumour was very large. Now, there are considerable differences in the operation which I performed upon this woman. In the first place, instead of laying open the sac, I reduced the rupture without interfering with it : in fact, did that species of operation which is now talked of as the operation for hernia without opening the sac.

This proceeding may be looked upon as of modern date; for, although it was described and recommended by Petit, Monro, and others, and advocated strongly by the late Mr. Key, it has been so little thought of by the generality of surgeons, that it is even now considered as a novelty; but, within the last few years, it has been brought prominently under the notice of the profession by Mr. Luke, of the London Hospital. Mr. Hancock has also written an elaborate essay on the subject. These two gentlemen, however, take quite different views about the matter. Mr. Luke strongly advocates the operation without opening the sac, whilst Mr. Hancock thinks unfavourably of the measure. I confess, on my own part, that hitherto I have not been able, from what I have read and seen, to give a decided opinion upon the relative worth of each proceeding; but I think the medium course is the safest and most proper for us to follow. It often happens, in surgery, unfortunately, as in other matters, that extreme views are entertained, perhaps to the disadvantage of essential points. I consider opening the sac, and not opening the sac, may be looked upon as extreme views. The most difficult and important points for the surgeon to decide upon are, the circumstances and conditions which should guide him in his practice. Those who advocate laying open the sac, say that the contrary practice is full of danger; and those on the other side say the same of the old operation.

Now, we have proof enough to show, that there, in reality, is not much danger in laying open the hernial sac; and then we know, that it is unwise to return the intestine, in all cases, back into the abdomen, because it may be in such a condition, that, when returned, it will ulcerate and give way. However, I do not mean to go into this extensive question at length now; but shall content myself with saying, that I entertain a most favourable opinion of the operation without opening the sac; but yet, I do not think it advisable to adhere to this plan alone.

In the case under our consideration just now, the sac was not opened; but this was not all the peculiarity; the external incision was different. Some years ago, I should have made the inverted Y cut over the tumour, so as to expose well its surface. I should have cut down to the sac, then found my way to the stricture, thus travelling from the centre of the tumour over its surface to the inner edge; and I may say, that most surgeons would have followed this mode of practice. Instead of doing this, I made a small straight cut, about an inch and a half long, over the inner side of the hernial tumour. I did not meddle with the body of the tumour, but cut almost distinctly over Gimbernat's ligament, which I wished to touch. By this means, instead of having to work my way right over the tumour, I was enabled to get at the stricture at once, having to carry my finger through a comparatively shallow space. I did not care whether I saw the sac or not, but sought for the ligament, placed the edge of the probe-pointed bistoury upon its margin, and divided it, when, with a little pressure upon the tumour, the contents of the sac receded. Now, this I consider a most simple proceeding; and for it the profession are entirely indebted to Mr. Gay, of the Royal Free Hospital; and I think that it deserves much more attention than it has already obtained at the hands of practical surgeons. I have for the last few years rarely performed any other operation. The incision in the skin, admits of the sac being opened, or not opened, as may be found advisable. I feel certain that those who see this operation performed will confess that there is some advantage in the proceeding over that which is usually done, both from the facility with which it was accomplished, and from the simple aspect of the whole process. I shall avail myself of other opportunities of calling your attention to this method, as I consider it worthy of your careful consideration; in fact, I should not be doing my duty as your teacher if I did not bring before your notice what I myself deem a very great improvement in connexion with hernia, as the proceeding referred to is really not much more than the simple operation of the taxis.

I will now advert to another point in this case, and that is, the early date at which the operation was done. In most cases, surgeons act upon the view, that it is their duty to apply all the usual means to facilitate the return of the hernia, and prevent an operation. Now, this in the abstract is a good doctrine, not only in reference to hernia, but to other surgical matters as well; yet we may be over-punctilious in this respect; and I most conscientiously believe, that mistakes have over and over again been made by surgeons in their anxiety to prevent the operation for hernia. It is true, that surgical writers inculcate the necessity of resorting to the operation at an early period; but in practice, unfortunately, it is found that this doctrine is not carried out, the practitioner being almost insensibly led to resort to every variety of means but the operation. Prompt conduct on these occasions constitutes a striking difference between the practical and the book surgeon. In hospital practice, especially, there ought to be no delay, because, in the majority of cases which are admitted, it will be found that these various measures have already been resorted to; and, even in consultation practice, we shall often find the same thing, and shall have little inducement for delaying an operation.

I can say for myself, that I have never once regretted operating early, but that I have again and again had reason to believe that the patient has been lost in consequence of delay in trying measures to cause reduction of hernia without operation.

This leads me to tell you, that a very erroneous notion prevails as to the hazards of the taxis or the knife. Surgeons in ordinary practice rarely seem to calculate upon the hazard of the persistence of the hernia in a state of strangulation ; they think seriously of the danger of the operation of relieving the stricture by the knife, but do not feel that there is considerable peril in squeezing the contents of a hernial sac in order to reduce it into the abdomen. Now, I believe there is often more danger likely to occur from the taxis than from the operation by the knife, because it is impossible to calculate what amount of pressure the parts will sustain without serious injury. The question, hitherto, has been between the taxis and the operation. This should not be so. Surgeons should consider what is the relative danger of the disease itself,—the hernia in a state of strangulation, and operation. It should be borne in mind, that the state of the system induced by so serious an occurrence as a strangulated hernia, is accompanied by a vast deal of danger, and this hazard to life increases from hour to hour ; for, from the bowel being confined by a stricture, the circulation is altered, and a perverted state of peristaltic motion is produced ; and, if this is not remedied, changes occur both in the part strangulated and in the system at large, which are sure to bring about a fatal result. The dangers of the operation consist in the first place, of the incision; in that there is no risk. Next there is the exposure of the hernial sac or of its contents ; but I have just observed, that in a great number of instances this need not be. There is also the danger of hemorrhage, but that is so unlikely, that a good surgeon need hardly take it into consideration. There is a chance of wounding the intestine, but here the same remark may be made as respecting the fear of bleeding. Inflammation may come on after the operation and destroy the patient ; but even this is a rare thing to occur. It is very true that persons do die after they have been operated upon, with all the signs of inflammation of the peritoneum; but nevertheless, this inflamation, in the greater number of cases, is not due to the operation itself, but has existed prior to it, and been produced by the agency of the stricture upon the gut. Of this I am convinced, after the experience of many cases which have fallen under my notice, in which operation had been performed without permanent benefit. It is my firm opinion that all these supposed dangers put together are far less than the single one which obtains from the persistence of a hernia in a state of strangulation; therefore, as a general rule, I advise you not to delay, but, after having made a fair trial of the taxis, operate early. Do not put your faith in opium, because in one or two cases you have seen the symptoms subside after the administration of a powerful dose of this drug. It is an excellent remedy in certain instances, but there are few in comparison with those wherein it can be of no essential service.—*Medical Times and Gazette, Sept.* 4, 1852, *p.* 229.

84—CASES OF HERNIA.

By Bransby B. Cooper, Esq., F.R.S.

[Mr. B. Cooper, in remarking upon the treatment lately recommended by M. Malgaigne, not from any spirit of rivalry, but from what he considers due to himself, states, that he had devised the plan so far back as 1837. He endeavoured to convert irreducible into reducible hernia, by enjoining the recumbent position, maintained for a long time; the use of purgatives, and other lowering medicines; the application of cold to the tumour, and frequent gentle employment of the taxis. He relates the following cases.]

The first occurred in 1837, A gentleman, named W., came to my house to consult me respecting his son, a lad of seventeen, who was afflicted with an irreducible congenital hernia, which had become irreducible about two months before he was brought to me. During these two months he had twice suffered severely from obstruction in the descended bowel.

In this case I attempted to reduce the hernia by the taxis; but failing in this, I adopted the following treatment:—I first ordered an enema to empty the lower bowels; then a purgative pill at night, with a saline purgative draught in the morning. His bowels were freely opened by these means; but as the hernia still remained irreducible, I ordered that he should keep himself in the recumbent position, with his shoulders raised by pillows, and his thighs bent upon the pelvis, so that the muscles of the abdomen might be perfectly relaxed; ice was frequently applied to the surface of the tumour; he was kept upon very low diet, with the bowels moderately open. This treatment was continued for nineteen days; nothing remarkable occurred during that time; but on the nineteenth day the hernia was reduced almost accidentally by the hand of the patient himself, who was feeling to ascertain whether the tumour had diminished in size. A truss was at once applied, and from that time I never heard that the hernia had descended again.

In 1838 a patient was sent to me by Mr. Hutchinson, of Witham, in Essex, with a large irreducible scrotal hernia; it had been irreducible about three months, during which time he had only once or twice suffered from any symptom of intestinal obstruction. The inconvenience arising from the size of the tumour was, however, so great, that he was very anxious to have any operation performed for its reduction. I recommended in this case a plan of treatment exactly similar to that last described; but in addition, as the patient was very plethoric, I ordered that he should first be bled from the arm; but either from fearing the restrictions required in my method, which I had explained to him, or perhaps from some reason connected with his avocation, (that of a farmer), he did not at once submit himself to the treatment, although he at first appeared so desirous of doing so. After about three weeks, however, he placed himself under Mr. Hutchinson's care, and adhered to all my directions with the greatest exactness and patience. He lay for fifteen days, and on the evening of the fifteenth Mr. Hutchinson easily reduced the hernia by gentle taxis. A truss was applied, and there was never afterwards, to my knowledge, any symptom of the hernia again returning.

My late friend, Dr. Badeley, of Chelmsford, hearing of the result of the treatment in the last case, at the end of the same year sent me an old gentlemen, who had had a scrotal hernia for four years. During this time his life had once been in great danger from protracted obstruction of the protruded bowel. I described to Dr. Badeley the treatment I had adopted in Mr. Hutchinson's case. I directed him to keep his patient recumbent, to freely evacuate his bowels, to apply ice to the tumour, and to limit him to very low diet. It was five weeks before the tumour became reducible in this case; it then went up suddenly as the patient was getting up out of a chair, in which he had been sitting whilst his bed was making. In this case, as in the others, a truss was put on at once, and, four years after, the patient told me that the hernia had never returned. I had subsequently a second case of this kind from Dr. Badeley, which was treated upon the same principle, and terminated equally successfully. I have published an account of this case in my 'Lectures on Surgery.'

In January, 1852, W. M., aged 29, a coal-porter, temperate, and in good health, was admitted into Guy's Hospital with an irreducible hernia on the right side of the scrotum. He stated that the hernia had existed for six years; but that four days before he applied to be admitted the tumour became suddenly much larger, and that for three days he had suffered all the symptoms of strangulated hernia. When placed in the ward, an enema was administered. and he was put into a hot bath. By means of the taxis the freshly-protruded portion of bowel was easily returned into the abdomen; but the old irreducible part still remained, not less than a goose's egg in size, as it had been indeed during the previous six years. I considered this an excellent case upon which to try my treatment for the purpose of rendering the whole reducible. I accordingly confined the patient to bed, and employed all the means I have already spoken of, and, besides these, in this case I prescribed small doses of blue pill and tartarized antimony. I have done this in many cases, and should always give slightly nauseating medicines when I had reason to believe that the hernial sac contained fat; but in this case I judged, from the peculiar feel of the tumour, that a considerable quantity of omentum had protruded with the intestine; and the blue pill and tartarized antimony were given with the view of favouring the absorption of fat. This patient continued perseveringly to submit to the plan of treatment laid down for nearly four months, the tumour gradually diminishing, ultimately it went up with very little difficulty, and a truss being applied as in the other cases, the patient was discharged from the hospital, cured.

The conversion of an irreducible into a reducible hernia, is a matter of no slight importance. It is true that a person who is the subject of irreducible hernia may long continue in perfect health, but he is always in danger of the displaced portion of intestine becoming suddenly obstructed, and from its liability to injury from external violence, even after a very lengthened period.

[Speaking of the use of opium in strangulated hernia, Mr. Cooper says, that large doses of opium given in these cases, produced not unfrequently a precisely similar effect to that of the treatment of irreducible hernia detailed in the first cases.]

The opium seems to produce these effects by diminishing the irritability of the intestinal canal and checking vomiting, relaxing at the same time the constriction of the bowel by lowering the general tone of the muscular system. Under such circumstances the strangulated hernia will often become reducible, being brought under the influence of the constitutional remedy. In strangulated hernia I should always recommend the operation by preference, but it sometimes happens that patients will not submit to the operation; in that case I resort to the treatment with opium. Many of such cases have happened in my practice; some I have already published. I shall now relate two or three which bear upon the point in question.

In April, 1847, Mr. Berry, of Wilmington square, sent for me to see a lady, aged 60, living at Pentonville, who, while reaching to a high shelf, was seized with a sudden increase of an old irreducible femoral hernia. I found her suffering from urgent symptoms of strangulated hernia. I attempted to reduce the freshly-descended portion of bowel by the taxis, but was unsuccessful; I therefore immediately recommended the performance of the operation, but the patient refused to submit to it. Under the circumstances I ordered her to take at once three grains of solid opium, two grains more to be taken in a couple of hours, should the symptoms remain unrelieved. The second dose was given, when the sickness gradually subsided, the tumour became flaccid and resumed its former size, the freshly-protruded portion of bowel having returned within the abdomen. The next morning the bowels were freely opened; a truss, with a hollow pad, which she had worn before upon the old hernia, was applied, and from that time she remained quite well.

This patient died of Asiatic cholera in the autumn of 1849.

Mr. Shelley, of Epsom, (formerly my dresser), to whom I had spoken of the last case, was called in to a woman aged 40, who was the subject of a strangulated inguinal hernia, of three day's standing. She had constant stercoraceous vomiting. It was immediately proposed that the operation should be performed, but the patient declared that she would rather die; he therefore ordered her an immediate dose of two grains of opium, to be followed by one grain every two hours. The patient took eight doses, when the vomiting and pain ceased. An enema was given, which operated freely, and on the evening of the second day from the commencement of the treatment the hernia was reduced by very gentle taxis.

In January, 1848, I was called to see the wife of a Mr. C., in the Hampstead-road; she was suffering from the symptoms of strangulated hernia. When I examined her, I found a small femoral hernia, which had descended for the first time the day before. I ordered the patient to be put into the hot bath, and to take calomel and opium to allay the sickness; also that a purgative enema should be administered immediately. I saw her again about ten hours after she had been treated as above. The sickness had then in some degree abated, but the bowels had not been relieved, and she was now suffering from retention of urine. I drew off the water with a catheter, and then proposed to perform the operation for the hernia; she determinedly refused to submit to the operation, and I therefore decided at once upon trying the opiate system of treatment. I ordered three grains of solid opium to be taken directly, and a grain every three hours until the sickness was subdued. The next morning I saw her about nine o'clock. She had taken three doses of the opium, the sickness had ceased, and the pain in the abdomen had also left her; the tumour itself was neither so tender to the touch nor so tense as before the opium was taken; and the urine had been passed without difficulty. I now ordered that ice should be applied to the tumour, and that another purgative enema should be given. At ten P.M., I called again and found that she had passed a good motion; she was also perfectly free from pain. I tried to reduce the hernia by the taxis, but could not succeed; I desired, therefore, that she should remain in the recumbent posture, which she did during the whole of the next day, the ice being frequently applied to the hernia.

On the sixth day from the time of the hernia descending she unexpectedly came to my house, to tell me that the night before the hernia had gone up by slight pressure from her own hand. Mr. Bigg, of Leicester-square, applied a truss, and the patient has remained quite well up to the present time.

Mr. Shelley, whose name I have already mentioned, knowing that I had employed in many cases the opium treatment I have been describing, sent me the three following cases, showing the result of the treatment in his own practice. I give them in his own words:—

"In October, 1849, I was called to J. S—, aged 38, a tall, strong man, by occupation a groom; he had been ruptured some years before, and then wore a truss for a short time, but as the hernia never came down, he soon left it off. On the morning of my visit he had again ruptured himself whilst lifting a heavy weight. He attempted to reduce the hernia, but could not succeed, and symptoms of strangulation coming on, he sent for me. I found a scrotal hernia on the right side, some sense of constriction at the epigastrium, and nausea. The hernia was very hard and tender at the neck. After trying the taxis for about an hour without producing any effect upon the tumour, I resolved to give opium. I gave three grains, and desired the patient to keep his bed. Four or five hours after, I again visited him. To my surprise, I found him sitting quietly by the kitchen fire. Upon my remonstrating with him for his imprudence, he replied that he was quite well now, for that he fell asleep soon after I left him, and when he awaked, he found the rupture softer, and tried to force it up. He succeeded without much difficulty; and I obtained a truss for him, which he still continues to wear."

"M. H., aged 45, a married woman. At her last confinement, which took place about four years previously, she had a very difficult labour. After this, she noticed a small lump in her groin, but as it was not always present, she did not notice it very particularly. According to her own account, she was seized with violent griping pain in the stomach one evening whilst sitting at work. This continued with great severity, causing her to be bent double and to press her stomach with her hands; about five o'clock next morning sickness came on, and became stercoraceous after two or three days. She was first treated with aperients, and afterwards with tobacco enema. The taxis was also tried, but altogether without success. On the fourth day, Dr. Lane, of Ewell, was called in, and suggested the exhibition of opium in large doses, as the woman obstinately refused to submit to the operation. The opium had the desired effect of subduing the vomiting and relieving the collapse, and on the fifth day from the commencement of the attack, the rupture was reduced. The woman is now alive and well, but says she suffers from constipated bowels. She does not wear a truss, although she says there is sometimes a small lump in the groin; but it goes back again."

"May 21st, 1851, I was called in by a neighbouring practitioner to take charge of a case during his absence. The patient was a short, spare man, aged 50. Early in the morning he had ruptured himself whilst straining at stool; the taxis had been employed unsuccessfully for three hours. The hernia was about the size of a walnut, hard and tender, from manipulation; countenance anxious, with a strong sensation of constriction at the epigastrium. Opium was immediately recommended. I gave at first a grain and a half, and half an hour after another grain and a half. Having ineffectually tried the taxis, I left the patient, ordering a warm bath to be prepared. I soon returned, and found him fully under the influence of the opium. The constriction at the epigastrium, as well as the retching was relieved. The patient had been dozing, and indeed could scarcely be kept awake. I again employed the taxis, and in a few minutes returned the hernia. He slept off the effects of the opium, and was soon able to return to his work, wearing a truss."

The following case was also communicated to me by Mr. Shelley:—

"Dr. Butler Lane, of Ewell, about two years ago was called to see a patient, who was suffering from irreducible hernia. He had been ruptured for some years, and always wore a truss. If ever the hernia descended, he laid himself down, and was soon able to reduce it. On this occasion, however, the hernia came down whilst he was lifting some straw, and the patient was unable to return it into the abdomen. After trying for some time, symptoms of strangulation came on, and Dr. Lane was called in. The taxis was now employed, but without benefit. Dr. Lane, therefore, gave him a large dose of opium, and left him in an easy chair in his surgery. He left him thus for about two hours, and upon his return found that in the meantime the man had succeeded in returning the hernia."—*Lancet, June* 19, 1852, *p.* 586.

85.—ON HERNIA.

By WILLIAM PIRRIE, Esq., F.R.S.E., Regius Professor of Surgery in the Marischal College of Aberdeen, &c.

It is a question of great importance, in reference to the operation for strangulated hernia, which of the two following modes of proceeding in regard to the hernial sac is the more advisable; namely, that of opening the sac, and dividing the stricture from within; or that of dividing the stricture, and replacing the parts without opening the sac. Of these two, technically called the *intra-peritoneal* and *extra-peritoneal* modes of division, the former is that, which, except in a limited number of cases, has received the sanction and adoption of most surgical authorities in these islands. It appears certain that, in the great majority of cases, it is by that mode alone, that it is possible to accomplish the two grand indications which it is desirable to fulfil by the operation; namely, the removal of the pressure by division of the stricture, and the return of the hernia. The fulfilment of the former, namely, the removal of the pressure by division of the stricture, is essential to the safety of the patient; and that of the latter, the return of the hernia, exceedingly desirable when practicable and proper.

With regard to the *first* indication, when the stricture is external to the sac, as is not unusual, it is possible to divide it by adopting either mode; but if formed by the sac, or within it, it is clear, that by intra-peritoneal division alone can the more important indication be fulfilled, or any good effected. Cases belonging to the latter class are by no means of unfrequent occurrence. That the neck of the hernial sac occasionally constitutes the stricture, is a point regarding which surgeons are agreed, instances having been recorded by the great surgical authorities of this and other countries, and examples occurring frequently in the practice of many surgeons. The sac, necessarily narrower at its neck than in other parts, is liable to be still further diminished by effusion and organization of lymph, either on its outer or inner surface, as well as by a thickened and indurated state of its own substance, —conditions which, separately, or in various degrees of combination, diminish the canal of the sac. For eighteen years I have availed myself of every opportunity of examining the condition of hernial sacs, and from my dissections I am led to conclude, that in herniæ of considerable standing, thickening of the neck is of frequent occurrence. Although constriction, when sufficient to render a hernia irreducible, is usually at the neck of the sac, yet it is not invariably so. This fact is of little practical moment if a hernia be merely irreducible; but it becomes of the greatest importance if it be strangulated, and require an operation, as the paramount object of the operation is to divide the constriction, in order to relieve the symptoms of strangulation.

The stricture is occasionally found within the sac. In a very few instances it has been found to be occasioned by a loop of intestine; in some by a band of omentum; and in others by a band of lymph effused from the serous coat of the intestine, and surrounding and constricting it as by a ligature.

This last-mentioned condition has been described and delineated by

Sir Astley Cooper. It has also been met with by other surgeons; and not fewer than four cases of it have come under my own observation.

From what is stated above, it appears very clear that the extra-peritoneal mode of herniotomy is quite unsuitable when the stricture is formed by the sac or within it, whatever be the nature of the stricture itself; and the above-mentioned examples of strictures formed by membranous bands, suggest very strongly the propriety of great caution in arriving at the determination of adopting the extra-peritoneal division; as well as, in those cases in which the sac is opened, of examining very carefully before the hernia be returned, whether membranous bands do or do not exist.

The *second* indication which it is desirable to fulfil by an operation, is the return of the hernia.

With a view to facilitate the inquiry, as to which of the two modes of procedure is the more suitable, cases may be arranged into the three following classes:

First,—Those in which the stricture is external to the sac, in which it is neither impracticable nor improper to return the hernia—and in which no obstacle exists to that return after the stricture has been divided. Secondly,—Those in which an obstacle does exist after division of the stricture: and, Thirdly,—Those in which the return of the included intestine would be practicable, but improper.

First,—In cases belonging to the first class, either mode is applicable; but extra-peritoneal division being attended with much less danger, is decidedly preferable.

Secondly,—In regard to cases in which, independent of the stricture, an obstacle to reduction exists, it will be proper to consider what are the principal obstacles most frequently met with. These are adhesions of the protruded parts to the hernial sac, the natural means of connexion, in some rare cases; adhesions of the protruded parts to each other; and the large size of the hernia.

For a description of these obstacles to reduction, the reader is referred to the section on irreducible hernia.

If any of these conditions exist, and if the sac be not opened, reduction is in general impracticable. If the sac be opened, two of them may easily be overcome; namely, the soft recent adhesions formed by coagulable lymph, and the filamentous,—the former can be broken down with the finger, the latter divided by the knife. Two of them present an insuperable impediment to reduction; namely, the natural means of connexion, and the close organized adhesions, if these be to a great extent, and the hernia large. With regard to the two remaining conditions, the possibility of overcoming them, and the propriety of attempting to do so, must depend entirely on the particular circumstances of the case; but frequently, it is more judicious not to interfere with them, unless they exist only to a limited extent, and in herniæ of moderate size. Most of these conditions, however, are principally met with in cases of large and old hernia; and, on account of the risk of injuring the intestine in attempts at reduction, as well as that of inducing dangerous inflammation by much handling of the intestine, and the difficulty of maintaining the parts reduced, even should reduction be possible, the majority of surgeons seem now disposed to follow the advice of Sir Astley Cooper regarding such cases. His practice was, to divide the stricture, which fortunately in such cases is, for the most part, external to the sac, and to leave the latter unopened, and the hernia unreduced. The stricture being divided, the principal cause of danger is removed. The coverings of the hernia should be replaced, and proper means taken for promoting the healing of the wound.

Thirdly,—There are certain states in which it would be extremely improper to attempt reduction; namely, when the hernia is gangrenous, or when the intestine has given way from inflammation having gone on to gangrene, or when it has been torn, or accidentally wounded in the operation. The two last-mentioned conditions can only result from unskilfulness in the mode of procedure; but, should they exist, the hernia ought not to be returned. When the intestine presents such an appearance as to render it doubtful whether its return may be followed by fæcal extravasation, the surgeon should content himself with carefully dividing the stricture. In all cases in which the intestine is gangrenous, or not entire from whatever cause, it ought to be allowed to remain, so that the fæces passing off by the wound may form an abnormal anus, and extravasation into the abdomen be thereby prevented. When omentum forms the hernia, and it is gangrenous, the gangrenous portion may be removed, and the remaining part returned to the abdominal aspect of the mouth of the hernial sac. The practice of removing a portion of omentum, when from growth it renders a hernia irreducible after division of the stricture, is a proceeding which, in some cases, may be adopted with advantage. For cases belonging to this class, extra-peritoneal division is of course quite unsuitable. These remarks, it is to be hoped, will be sufficient to point out the proper mode of procedure when the hernia is sound, and reducible after division of the stricture; when it is irreducible after such division—and when it is in any of the various conditions in which reduction would be dangerous and improper; and also to show, that to follow one method indiscriminately in all cases would be unwise; that intra- or extra-peritoneal division should be adopted according to the particular circumstances of the case; that in the majority of cases intra-peritoneal division is not only the more suitable mode, but the only one which is safe, or by which any good can be effected; and that the cases in which extra-peritoneal division is suitable are those of very short standing, where there is no reason to apprehend the existence of adhesions, or of an unsound condition of the hernia; and those also of large and old hernia, where the more judicious proceeding is to divide the stricture, and not to attempt reduction.

[The following are Mr. Pirrie's cautious observations with regard to the taxis.]

There can be no doubt that intestinal inflammation is the most frequent cause of death after the operation for strangulated hernia. Some of the advocates of Petit's method have assigned as the causes of that inflammation, when the ordinary proceeding is adopted, the exposure of the intestine to light and air, change of temperature, and handling. I agree with Mr. Lawrence in ascribing it, not to these agents, but chiefly to the long-continued pressure of the structure, owing to the operation being *too long delayed,* and to an injudicious and *too frequent use of the taxis* previous to the operation. I remember being very much struck with an observation of Desault's; I have not his works beside me at present, but it is to this effect:—" Think well of that hernia which has been little handled and soon operated on." The operation is justifiable and necessary, when the patient has been brought fully under the influence of chloroform, and the taxis has been fairly, fully, and skilfully tried without producing the desired effect. The conviction being thus produced, that by no other means than an operation is there hope of saving the life of the patient, it ought to be resorted to as quickly as possible. Much handling must not only give unnecessary pain, but also increase the risk of hurrying on the inflammation to results which, even though the operation should be performed, would render it unsafe to return the hernia. When therefore the taxis has been fairly and skilfully tried, on a patient fully under the influence of chloroform, no advantage can, but considerable injury may, result from the repetition of treatment already found to be unavailing. Many considerations show that the operation should be performed as soon as possible, after its inevitable necessity has been found to exist. Delay, like undue handling, increases the risk of inducing such a state of the hernia, in consequence of inflammation, as would render its return unsafe. From the circumstance that a hernia may speedily prove fatal, and from the depressed state which comes on in consequence of delay, rendering the patient less able to stand the shock of an operation, will be seen the importance of being as prompt as possible; but there is another and a very urgent reason—namely, that if the operation be delayed until intestinal inflammation has been induced within the abdomen, it is far from certain that this inflammation will subside on the removal of the hernia which caused it. I have performed the operation for strangulated hernia, according to the usual mode, a considerable number of times, I believe twenty-three in all, and (except in one case, where death occurred in consequence of an attack of phlegmonous erysipelas which commenced after the patient was considered out of all danger) in every instance with success. This success I attribute to two things—namely, avoiding all undue and useless handling, and performing the operation early. My decided impression is, that the reason why the operation is so frequently followed by death, instead of being one of the most successful of the great operations of surgery, is, too great delay in resorting to an operation, and the undue and injurious use of the taxis, even after its adoption has proved unavailing.—*Medico-Chirur. Review, July,* 1852, *p.* 181.

86.—OBSTRUCTION IN THE LARGE INTESTINE, DURING FORTY DAYS, IN WHICH THE ASCENDING COLON WAS OPENED.

By John Hilton, Esq., F.R.S., Surgeon to Guy's Hospital, &c.

[Mrs. —, aged 42, having suffered from constipation of several days' duration, with considerable distention of the abdomen, and occasional vomiting, was visited by Mr. Vincent, of Stratford, on the 2nd March,

1851. No relief followed the administration of purgative medicines. Dr. Golding Bird, who saw the case on the 6th, concluded that it was one of mechanical obstruction in the lower colon. No obstruction could be detected on examination with the finger in the rectum. As the symptoms did not seem urgent, it was agreed to defer any operation, and to continue the sedative treatment by opium, small quantities of nutritious diet, and simple enemata, daily. After the constipation had lasted forty days, it was deemed at length advisable to operate. The operation was performed by Mr. Hilton, at four p.m., April 9th, 1851. Mr. Vincent, and Mr. Poland, assistant surgeon to Guy's Hospital, assisting.]

The patient was brought to the edge of her bed, opposite a good light, placed on her left side, with a slight inclination upon the abdomen, which was too tender to allow of her lying entirely upon it. If it be important, in cutting down upon the carotid artery, to see the sterno-cleido mastoideus and the omo-hyoideus muscles; or in the operation upon the subclavian to recognise omo-hyoideus and scalenus anticus muscles,—so in the operation of opening the colon in the lumbar region, behind the peritoneum, it is essential towards an exact and proper performance of his operation, that the surgeon should bring into view, by his incision, the outer edge of the quadratus lumborum.

In a thin patient, the outer edge of the erector spinæ muscle may be distinctly felt, as also may the apices of the transverse processes of the vertebræ; aud these signs will be sufficient guide to the position of the quadratus lumborum muscle. But in a very fat person, in whom neither of these points can be determined, it will be necessary to draw a line, parallel to the spinous processes, directly downwards from the angle of the seventh, eighth, or ninth rib, across the costo-iliac space, to the crest of the ilium. This line corresponds with the outer edge of the erector spinæ and the apices of the transverse processes; and a measured inch from it outwards corresponds with the outer edge of the quadratus lumborum.

Before commencing the incision, and for the purpose of determining its intended course, I felt for the apices of the transverse processes of the lumbar vertebræ. These processes, or one or two of them, and most probably the third, (being the central and usually the longest), may be discovered by deep pressure on the outer side of the erector spinæ. I assumed that the quadratus lumborum might be about one inch wide; and therefore made a vertical incision, nearly two inches long, between the last rib and the crest of the ilium, extending nearer to the ilium than to the rib. This incision was made at a right angle with the direction of the transverse processes of the vertebræ, and one inch from their apices.

One well-directed single cut divided the skin and cellular tissue tendon of internal oblique muscle, and exposed the outer edge of the quadratus lumborum. Two small arteries required ligatures, more for the purpose of preventing the escape of blood during the further progress of the operation, which might cause some obscurity, than from the apprehension connected with the loss of blood. The last dorsal nerve, lying across the upper part of the line of incision, was divided. This division gave the patient momentary pain at the peripheral distribution of the nerve. I had heard or read that in one case operated on in France, the patient had suffered severely from pain and exquisite sensitiveness in the wound for a very long time after the operation. Thinking it probable it might have been associated with the position of this or some other nerve, I thought it better to divide the nerve than to expose the patient to the possible consequences of its blending with the margin of the wound, or cicatrix.

The wound being now free from blood, the transversalis abdominis muscle was divided vertically, to the extent of nearly two inches, parallel to the outer edge of the quadratus lumborum, a considerable quantity of loose lobulated fat was exposed, a part of which was taken away, and the rest displaced by the blunt end of a director, in accordance with the direction of the original incision. An artery which had been divided required two ligatures, as it bled freely from both ends; and then the intestine was clearly and perfectly brought into view, of a greyish pink hue, and somewhat bulging. A director and forceps cleared a portion of the surface of the intestine of fat and areolar tissue, to the extent of an inch at least. The intestine was now rendered more prominent at the bottom of the wound, by the anterior part of the abdomen being pressed upon, so as to push the intestine towards the opening in the loin. A long curved needle armed with silk was passed through the intestine, and then through the integuments at the point nearest the anterior edge of the wound, so as to fix the intestine anteriorly; and in a similar manner the part nearest to the posterior edge was likewise fixed. An incision of about an inch in length, vertically between the transfixed point above alluded to, was then made into the intestine. Some gas and a small quantity of thin fæculent matter escaped immediately through the opening, and then ceased to flow—the intestine at that time being perfectly quiet—but in a few seconds the vermicular action of the intestine appeared, and was followed by a flow of thin brown fæculent fluid through the opening. This occurrence and arrest of the flow of fæculent fluid, consequent on the presence or absence of peristaltic action, supervened several times; sometimes associated with the manifest movements of the small intestines towards the cæcum,—at other times resulting from the retrograde influence of the transverse and descending colon, so that the transverse colon was emptying itself from left to right, contrary to its usual course. A ligature was applied to a small artery, which had been cut in the walls of the intestine. Two additional sutures were now applied, to fix the upper and lower angles of the wound in the intestine to the nearest part of the skin. The wound being free from blood, the intestine fixed, and the fæculent matter streaming out occasionally from the wound, napkins and sheets were so arranged as to receive the discharge, and the patient was placed upon her back, expressing herself much relieved by what had been done. Not more than half an ounce of blood was lost during the operation. Two grains of opium were given immediately, and some wine and water.—*Guy's Hospital Reports, Vol. VIII., Part* 1, *p.* 186.

[From this time to midsummer, 1852, the case progressed favourably, when some untoward symptoms occurred. These, however, are reserved for a future period.]

87.—ON DISEASES OF THE RECTUM.

By Richard Quain, Esq., F.R.S.

[In speaking of the excoriations and ulcerations which are met with in the lower part of the rectum and at its orifice, and which occasion such disproportionate suffering and anxiety, Mr. Quain relates the following examples.]

(*a*) A barrister, about 35 years of age, states, that he has been troubled for some months with itching and painful irritation, especially at night, and when ailing in any degree. He has had, moreover, actual pain during defæcation, which comes on during the evacuation, and lasts for half an hour afterwards.

Upon examination, two or three streaks of excoriation were found around the anus, no more than the epithelium being removed, and a single point of ulceration, no larger than a pin's head, between the folds of the skin. After having, as he informed me, tried various remedies, including acetus plumbi with opium, as a lotion and as an unguent, he was entirely relieved by the following plan:—The bowels were kept free by the management of his diet after an aperient of confection of senna had been used for a short time. The little ulcer was once touched with a point of sulph. cupri. Afterwards, in the morning after the bowels acted, and in the evening, hot water was applied with a sponge for a few minutes, and then each time an ointment, consisting of hydrarg. c. cretâ and ceratum cetacei (ʒ ss. to ℥i.)

The use of these remedies soon gave relief, and, in a couple of weeks, wholly removed the ailment.

It is unnecessary that the forms of disease in which local applications are sufficient for the cure should be illustrated further. I therefore proceed with cases which require an operation for their permanent relief.

(*b*) About fifteen years ago, after a miscarriage, Mrs. — was attacked with external hemorrhoids. The malady gave little trouble until about five years since, when, after childbirth, the hemorrhoidal tumours became enlarged, and excruciating pain was at the same time felt during the evacuation of the bowels. For three years before the operation, pain constantly came on under the same circumstances; and during the last three months, it was most intense when the fæcal discharge happened to be at all consistent or figured. To prevent this source of distress, the constant use of magnesia was found to be sufficient to act as a laxative. There was no pain, except after an evacuation.

When I saw this lady—it was about a month after her accouchement,—her general health was good, indeed, it was habitually so. But pain came on with every alvine evacuation, beginning at the commencement of the act, and lasting a couple of hours or longer. I found her lying upon a couch, while she strove to teach her children, but unable to satisfy herself in the manner of discharging this duty on account of pain. Abrasions of the cuticle were apparent towards the back part of the anus, with a small amount of ulceration. There was comparatively but little pain excited during the examination in this case.

Various applications having been used by this lady's medical attendant, but without material advantage, I divided the membrane through the ulcerated and excoriated part, and a permanent cure has been the result.

The account of the foregoing case is abridged from a detailed statement, for which I am indebted to my friend Mr. Gasquet, by whom my assistance was required for its management.

(*c*) Mr. ——, a gentleman, aged about 60, who has the appearance and constitution of a healthy person fully ten or fifteen years younger, had been suffering for three months before he applied to me (now more than four years ago), from distressing uneasiness about the lower part of the rectum. He stated, that at first there was a small lump (external hemorrhoid), from which a surgeon had removed by incision a clot of blood; but, notwithstanding this operation, the uneasiness continued.

When I visited this gentleman, I found that he had been taking an electuary containing sulphur, and that when his bowels acted under the influence of this medicine, much pain was felt during the evacuation, the the fæcal matter at the same time having a strong sulphurous odour. When the bowels acted without the medicine there was no pain during the act of defæcation; but subsequently, in an hour, or even after as long an interval as two hours, a distressing uneasiness came on, and continued a good part of the day. There was here, as in the preceding case, but little of the extreme sensibility during examination which we shall find occurring in other persons. No excoriation or other appearance of disease existed externally, and indeed it was only after a very careful scrutiny that any diseased appearance was detected. The examination, it may be mentioned, was perseveringly continued, from the conviction, that the occurrence of pain after the evacuation was a certain indication of disease of the mucous membrane. A single point of thin, or nearly translucent membrane, having been found, an incision was made through it. Thereby the patient was entirely relieved, and he has continued well after a lapse of upwards of four years.

(d) Mr. H., aged about forty, a robust and generally healthy person, is master of a grammar-school, but in the habit of taking a fair share of exercise. The following outline of the facts is taken from a detailed history of his malady, furnished to me by the patient.—" Ever since (to use the words of my informant) I assumed the *toga virilis* now over twenty years ago, I have been subject to flatulence, but am always better in summer than in winter; and whenever I get plenty of strong sweating exercise, I am all right and sound." Several years ago, (in 1843) the gentleman began to be troubled with a sharp cutting pain when he went to the closet, and the pain was in proportion to the hardness of the fæces. Under the advice of a respectable practitioner who attended his family, Mr. H. at this time took medicine thrice a-day, each dose producing at least one evacuation of the bowels. Of this treatment he "soon got tired;" but under the use of it he was relieved of the local pain, and he continued free from suffering for about two years. About the expiration of this period, the old dyspepsia and flatulence continuing, and in an aggravated form, he was induced to place himself under the care of a homœopathic practitioner, and says the patient, " whether by his dieting, his globules, or what not, I certainly improved in health

for a time. But we differed on one (to me) grand point. He contended that the fæces of a man in good health should be hard; and truly mine came hard, and shortly afterwards my old cutting pains returned." Mr. H. now had recourse to enemata, and by the daily use of this expedient, he was usually free from pain, but, without the water, an evacuation was never painless. By-and-by, even with the enema, there was a recurrence of pain, which began each time while the instrument was being passed. The duration of the suffering was "uncertain, extending to one, two, or three hours, sometimes the whole day, and occasionally part of the night also. Finding (says Mr. H.) that the suffering was often less when I was lying down, I got into a habit of evacuating just before going to bed, so that lying down might aid me. But though successful generally by this plan, I have often lain awake for hours in pain."

When I saw this gentleman, in 1849, I prescribed local applications, which, with the enema, afforded relief. After having gone on, however, for several months, with but little pain, and that inconstant, he called upon me a second time (Easter, 1850). I now found that he had gradually come to suffer a good deal. The pain occurred as before, after an evacuation, or the passage of the enema-pipe; never in any other way. Its duration had steadily increased, and "latterly had lasted from stool to stool."

On account of the horror this gentleman had of the pain that would be occasioned by examination of the rectum, from the recollection of a former occasion, I had chloroform administered. While he was under the influence of this agent I found an ulcer in the mucous membrane, a little below the point of the coccyx; and there were likewise three streaks of excoriation externally, towards the posterior part of the anus. I therefore incised the mucous membrane, and the skin as well, over the ulcerated parts. The report may be ended in the words of the patient:—"Immediately after the operation, which was performed without my knowledge or consciousness, the part commenced healing, and in about three weeks I was a different being. In less than a month the parts were as well as ever they had been, and to this time (two years from the operation) I have not felt any pain whatever. My old enemy, the flatulence, however, still teases me at times."

(*e*) Mr. C., aged 35, a tradesman, in large business, a very early riser, and active in his habits, in general good health, applied to me in 1847; states that he has had "some trouble about the bowel on and off for fourteen or fifteen years." At first the inconvenience was slight, but attacks of increased distress used to occur even then; and while these lasted there was pain, with prolapsion during the evacuations. At this early period he was in the habit of "taking drugs, which often brought on severe purging," and to this habit he attributes his constant suffering. For upwards of two years Mr. C. has felt pain after every evacuation of the bowels, beginning after the lapse of about ten minutes from the act of defæcation. At first he found some relief from lying down; but soon he was too much irritated by actual pain ("agony" he calls it) to remain still. He then devised for himself another mode of obtaining a degree of relief, viz., after having been at the closet he sat over a pail of cold water, the vessel being provided with a lid perforated like a night-chair, so that as he sat the diseased part was immersed in the water. Two hours were so spent upon every occasion before he could make the exertion even of dressing. Then, too, the pain still continued, though in a mitigated degree, insomuch that he was not free from suffering from eight in the morning until about two in the afternoon. For some time before I saw this patient he was not free from pain during the entire day. This, however, was on alternate days, for he avoided daily evacuations, in order to escape one half of the distress. If the bowels happened to act at night, both Mr. C. and his wife were hindered from sleeping for as much as five hours by his restlessness. Mr. C. mentioned to me, that while the pain lasted he had difficulty in restraining himself from being petulant even to his customers, or any other person with whom he had intercourse. To use his own words, he was often ready to "snap at them." But, when once the pain ceased he was perfectly well; and his appetite for food all this time was as good as ever it had been.

On making an examination, I found considerable folds of skin around the anus, (the remains, no doubt of external hemorrhoids), and within the bowel, opposite or below the point of the coccyx, a circular ulcer of the mucous membrane, about the size of the end of the little finger.

The patient being placed under the influence of chloroform, the membrane was divided through the ulcer for an inch and a half in length, and thenceforward all the old suffering ceased. Moreover, though he had before the operation, suffered from constipation, he has since then been wholly free from that inconvenience.

(*f*) The next case was seen by me in consultation with my friend Dr. Jenner, and Mr. Stevenson, of Rochester, in December, 1851.

Mr. P., aged about 35, a farmer of robust frame, and in good general health, for nearly twelve months, whenever the bowels acted, has been suffering pain, which has always come on during the evacuation, and has lasted about four hours each time. When the bowels acted of an evening, he has had pain all night. The suffering has been excessive,—a degree less, however, when the fæcal discharge is fluid; and he has found the lenitive electuary the best auxiliary to attain this end. At other times, and independently of the alvine evacuations, Mr. P. is entirely without uneasiness of any kind, and he then feels quite well.

From recollection of the effect upon some previous occasions, in the country, the patient could not control himself so as to submit to the examination. Chloroform was, therefore, administered; and when he was under its influence, I found the muco-cutaneous covering of the sphincter ulcerated to about the extent of sixpence, the bottom of the ulcer being of a vivid red colour. The ulceration was seated in the middle, at the back part of the bowel, immediately within the verge of the anus; and it involved the membrane covering the external as well as the internal sphincter. Above it there were two small, hard, and pendulous projections, about half-an-inch long, probably the remains of internal hæmorrhoids.

I incised the ulcer, together with the mucous membrane and skin beyond it, and snipped away the polypiform bodies at the same time. A full dose of Battley's liquor opii was prescribed soon afterwards by Dr. Jenner.

Upon one occasion, after the operation, when the bowels acted, the fæcal matter being indurated and in a large mass, the patient felt some soreness for three or four hours; but he states that the sensation was wholly different, in kind as well as in degree, from the pain he had long been accustomed to. A few days later, under the same circumstances, there was a little soreness during the evacuation, but it did not continue after; and when the patient left town (ten days after the operation) all uneasiness had disappeared. At this time a firm cicatrix occupied the place of the ulceration; and the examination now gave only the sensation of slight soreness, which went off at once. The patient mentions that, in a similar examination before he came to town, his shirt was wet through from perspiration, and his skin "became all over black" (his own phrase) from the agony he suffered. The pain, too, and of the same excruciating kind, lasted for six hours after. Even now, he says, he has still a curious fear of the action of the bowels, the remains of the "horror" he used to feel.

For our inquiry into the nature of this disease, by and by, it will not be immaterial to mention, that to his physician. Dr. Jenner, Mr. P. said, a few days after the operation, that I "must have made a great gash;" for that, while the size of the fæcal matter previously (since his ailment began), when figured at all, "was no bigger than a tobacco pipe" (his own expression), lumps of large size now passed without trouble. Lately Dr. Jenner has informed me, that our patient, whom he has seen since his return to the country, is perfectly free from suffering, and quite well in all respects.—*Med. Times & Gazette, July* 3, 1852, *p.* 1.

[Mr. Quain remarks that so far as his observations have gone, the general health of persons suffering from different forms of this singular local malady has been in every instance unexceptionable. He continues:]

The position and the degree of the morbid alteration, it has been seen in the cases, vary considerably. Thus the disease occurs externally, and within view therefore for examination, in the shape of excoriations merely, consisting in the removal of the epithelium, or as minute oval or rounded ulcers in the furrows between the folds of the skin about the anus, (Cases *a* and *b*); or it is situated more deeply as an excoriation, again, or ulcer, immediately within the grasp of the external sphincter, and higher up as an ulceration of the mucous membrane covering the internal muscle, an inch or more from the extremity of the bowel. The ulcer is met with at or towards the back part of the gut, not unfrequently opposite or directly below the point of the coccyx, (Cases *d* and *e*). I have indeed had to treat excoriation at the fore part of the anus, within the grasp of the superficial sphincter, as well as externally, but I have not hitherto had occasion to operate for ulceration of the membrane, except at the back part or the sides of the bowel.

The external ulcer has usually a yellow or ash-coloured base, but the internal one is often of a vivid red colour. Ordinarily the membrane is not ulcerated through, though instances of its being so have come under my observation. I have not hitherto been able to trace out satisfactorily the condition which precedes the state of ulceration. It seems probable, however, that a pustule or little abscess is the precursor of the ulcer. In one instance, the disease having been of no long duration, and the suffering comparatively slight, the membrane appeared to be thinned from beneath, but not visibly ulcerated upon the surface, (Case *f*). This condition I am disposed to consider one form, at least, of an early stage of the disease.

The extent of the ulcerated surface varies from the minutest point, (Case *a*), to the size of the end of the finger, (Case *f*). It seldom exceeds this size. The amount of actual disease, therefore, is but trifling in comparison with the pain, which is always described as harassing, and, in some instances, amounts to actual agony. For example:—A lady had difficulty for some hours in teaching her children, (Case *b*); another person "found it hard upon him" to attend to his ordinary avocations; a third, a man in business, was wholly disabled from all occupation for a couple of hours, and afterwards, for the space of three or four hours longer, was impatient and "snappish" on account of actual pain, (Case *e*). Two of the patients, (Cases *d* and *f*), from "horror" of the pain they had before experienced, declined to submit to an examination of the bowel without the use of chloroform; and, in one instance, so great and so diffused was the pain, that, while merely pressure was made upon the nates preparatory to an examination into the nature of the disease, the patient—a member of the medical profession—darted uncontrollably away, as if he had been stung. All this sensibility is, doubtless, owing to the peculiar organisation of the membrane affected,—the degree or mode, that is to say, in which the bowel is here supplied with nerves, for ulceration occurs higher up in the bowel without the pain, certainly without the agonizing pain which attends upon the ulcer at or near its orifice. With more or less intensity, the same sensibility exists in other outlets of the body, and it is obviously connected with their proper function, the organs being through them in communication, so to say, with the outward world. Every one is familiar with the acute sensitiveness of the eyelids, and most persons know how much suffering a small ulcer affecting the lip, especially on its inner side, will produce whenever food is taken. One other fact is worthy of notice before we quit this part of our subject, namely, that a wound of the mucous membrane of the bowel, made in the situation of the most painful ulcer, (for instance, the wound made in the operation,) though it gives rise, as would be expected, to common soreness, is not attended, when the bowels act, with any of the peculiar or depressing distress that arises from the idiopathic disease. (See especially Case *f*).

So long as the parts are undisturbed, the ulcer is not attended with pain; and of this the action of the bowel is the common and constant exciting cause. In many patients the suffering begins, as might be anticipated, with the passage of the fæcal matter, (Cases *a*, *b*, *d*, and *f*); but it is remarkable that in no small proportion of cases it is only after the lapse of some time from the act of defecation that the pain begins, (Cases *c*. and *e*.) It is, I believe, when disease exists externally, or immediately at the verge of the anus, that the pain arises during the evacuation; and it is when the ulceration is within the intestine, and only there, that the distress comes on subsequently.

The interval that elapses between the evacuation and the occurrence of pain varies from about ten minutes, (Case *e*), to half an hour, a whole hour, or even two hours, (Case *c*). I cannot assign the interval of time that elapses between the application of the exciting cause and its effect to any reasonable cause; nor can I account for the variations in its length, for though the delay seemed in most cases to be longer as the morbid change of structure and the suffering were slight, (Case *e*), yet it was not invariably so. In the example of greatest distress that has fallen under my observation, the pain did not arise till about two hours after the bowels had acted.

The duration of the suffering is equally various in different persons. It lasts in one case half an hour, (Case *a*); in another, two hours, (Case *b*); in a third, three or four hours, (Case *f*); and, in some, even a longer time. One of our patients was able to calculate on being relieved in about six hours, and no sooner, (Case *e*); while another came by degrees to be constantly in distress, with an increase at the time of defecation, (Case *d*).

The attack of local pain being at an end, the patient feels perfectly well, and apparently would continue so were it not for the disturbing effect of the passage of fæcal matter. On this account, some of the sufferers manage to diminish the number of the evacuations, (Case *e*); and others have even reduced the quantity of food to a very small amount.

Treatment.—As all persons suffering from these complaints state that the severity of pain is in proportion as the fæcal matter is figured and hard, and the converse, it is above all things necessary in the management of a case—be it excoriation or ulceration, be it external or internal—that means should be taken to keep the evacuations in a fluid state.

To attain this end the enema of warm water is more effective than any other means, and more generally applicable; but it occasionally happens, that even the use of the apparatus for this purpose is not endurable, (Case *d*). Laxative medicines are advantageous, and of various kinds in different persons. Thus, magnesia was found effectual in one, (Case *b*). Confectio sennæ is often useful. I have known a patient complain that the confectio piperis prescribed by an eminent surgeon had augmented the suffering very much; and the addition of sulphur to the lenitive electuary had the same effect in another, (Case *c*).

The horizontal position of the body after the evacuation is useful to relieve pain, but within narrow limits. I have read somewhere the recommendation, that, in order to miss the pain, the patient should get into the habit of evacuating the bowels at bed-time. It might, *à priori*, be expected, that, considering the effect of position on the large veins of the rectum, the expedient alluded to would be beneficial; but, turning to the evidence afforded by our cases, you will find it in practice to be often of but little or even no avail, for the suffering in some continued while they lay in bed, even so as to deprive them of sleep during several hours, (Cases *d*, *e*, *f*).

With local applications, the excoriations and ulcers which affect the skin are in almost all cases very manageable; but, as is found in treating sores elsewhere, the same remedy is not equally efficacious in all cases. In cases of mere excoriation, I have often derived advantage from the grey powder, (pulv. hydrarg. c. cretâ), mixed with cerate, (ʒ ss. or ℈ij. ad ℥i.), (Case *a*), and with or without a lotion of lot. plumbi, mixed with oxide of zinc; and a light touch of argenti nitras or cupri sulph. at intervals is generally effectual in causing the small external ulcers to heal. But when the ulceration is within the bowel, over the sphincters, I have no reliance upon any medicinal application; and the recourse to such means becomes of the less importance since an operation which is unaccompanied with risk rids the patient at once of all suffering.

Before proceeding to observe upon the operation resorted to in the foregoing cases, I have to say a few words respecting the speculum and chloroform, as applied to the complaints under consideration. From the speculum, after having resorted to the use of it in various forms, and with (latterly) the addition of a small reflector, I cannot say that I have derived any material advantage, either in making out the diagnosis of the disease, or in performing the operation. In some cases, indeed, from the position of the ulcer, the instrument is wholly inapplicable. The necessity for administering chloroform or ether for the operation depends on the degree of pain and spasm likely to arise when the anus is distended. Accordingly, in some of our cases, the anæsthetic agent was not used, (Cases *b* and *c*), the operation in itself being, in truth, but little painful; while in others, its use was almost indispensable, on account of the violent pain and spasm that arose whenever the orifice of the bowel was in any degree disturbed, (Cases *d* and *f*).

The method of performing the operation is as follows:—The forefinger of the left hand being applied upon the diseased point, a probe-pointed bistoury (that which I use is narrow, and the cutting edge reaches only over one-half the blade) is drawn fairly through the sore into the subjacent tissue. This is the method for ordinary cases; but where the ulcer is extensive, or complicated with other diseases, as fistula, some addition to the simple incision is necessary, according to the nature of the complication.

The sphincter is not necessarily interfered with; but it is very probable that the muscle is scored or notched, as the incision is carried quite through the ulcerated part.

The operation is, according to my experience, invariably successful in cases of the ordinary kind; but, inasmuch as it is not the operation commonly resorted to or recommended by the highest surgical authorities, a few further remarks upon the subject are necessary.

The eminent French surgeon, Boyer, it was who first relieved this painful disease by an operation; but this surgeon believed that the contraction of the sphincter ani was the chief disease to be overcome, and the incision he practised went through the muscle. There cannot be a doubt of the efficiency of the operation so performed. Moreover it was a great improvement in surgery; for, those afflicted with a most painful malady, before the introduction of this operation, were left to suffer on without real remedy. Little wonder, then that the operation, and in the same form, should have been universally adopted by surgeons. But the result of our cases proves, that this operation is a much larger and more serious one than was necessary, because it was attended with infinitely more risk of the dangers of surgical operations, viz., abscess, erysipelas, &c. In common with others, I practised the same method of operating, until a circumstance occurred which led me to adopt a different plan. A little more than twelve years ago, being about to perform Boyer's operation upon a female in this hospital, the patient, who was lying in bed and not held with sufficient firmness, having suddenly moved away, I drew the bistoury through the mucous membrane and integument only. It occurred to me at the moment to ascertain if that slight incision would be enough to relieve the patient. The success was complete ; and from that period I have used no other operation in ordinary circumstances. At the time I thought that this method had originated with myself ; but upon examining various books with a view to be assured upon this point, I found in a lecture of Sir Benjamin Brodie's a remark which satisfied me that priority in this matter was due to another surgeon. This will be apparent from Sir B. Brodie's words : —"The ulcer is always cured by a division of the sphincter, This however, is not always necessary, unless the muscle be actually contracted. Mr. Copeland has observed, that, when there is a simple ulcer, the mere setting of the mucous membrane at liberty by dividing it longitudinally, so as to include the ulcer in the incision, is sufficient to effect a cure."—(*Medical Gazette*, Vol. XVI., 1835).

No case shows better than this how long an erroneous system may be pursued in deference to an erroneous theory. The sore to be cured was a small one, such as would, in most other parts, give little trouble to the patient or the surgeon ; and the sphincter seemed to be mainly concerned in the disease, because of its being in a state of violent contraction, resisting very forcibly all efforts for the examination of the part. But this state of the muscle is, in my judgment, no more the actual disease than the spasm of the orbicularis palpebrarum is the curious and painful malady so often met with among children,—strumous ophthalmia. The passage of fæcal matter is, in the one case, what the stimulus of light is in the other. The muscular contraction is equally intense in both ; and the division of the muscle is no more necessary for the cure of the one than of the other. Doubtless the spasm very largely aggravates the suffering in both cases ; but its cessation in the complaint we are specially engaged with, by division of the ulcer and the mucous membrane only, proves sufficiently that the muscle is not the seat of the disease.

Morbid contraction of the sphincter ani.—The same eminent surgeon who introduced into practice the cure by incision for the disease we have just been considering, described also the spasm of the sphincter as a substantive disease, giving rise to exactly the same suffering, and requiring the same operation for its cure, as the ulcer with spasm of the muscle. Indeed, Boyer seems to have regarded the muscular contraction as the real malady of which the ulcer was but an accidental accompaniment, or a consequence. This view,—namely, that the spasm of the sphincter exists as an idiopathic complaint, and not only so, but is also the primary as well as the principal morbid condition, even when an ulcer exists—is very distinctly expressed by two other surgeons of the highest authority,—viz. Dupuytren and Sir B. C. Brodie; and, so far as I know, it is regarded as a well-established doctrine among writers on surgery.—(See 'Lecons Orales,' Tom. III. p. 286; and *Medical Gazette*, Vol. XVI., p. 26).

No one can hold in greater respect than I do the authority of the great surgeons whose names I have just now mentioned; but, feeling bound to state, in these lectures, the result of my own experience, I cannot hesitate to say, that I have hitherto, and after diligent search, failed to discover a single example of the disease as above defined, and that I dissent from the view generally taken as to the influence of the sphincter muscle in those complaints. If the division of the sphincter were still to be regarded necessary for the cure of the ulcer or fissure of the mucous membrane, attended with spasm, the question of the independent existence of muscular spasm as an idiopathic disease would probably be of but little moment in a practical point of view; but, if we are justified in considering it established, that the sphincter is but secondarily or sympathetically affected in that disease; and that a very much smaller operation (one not involving the sphincter) is sufficient, not only to cure the ulcer, but likewise to cure the spasm of the muscle at the same time, then the question of the existence or non-existence of another disease requiring for its cure the section of the muscle, becomes of practical importance. The whole subject is obviously one of evidence, but the evidence of facts, not of opinions. If you turn to the lectures of Dupuytren and Sir B. Brodie, you will find, that they contain no cases illustrative of the views maintained by the authors respecting disease of the sphincter. Boyer, however, is more circumstantial,—and with Boyer, let it not be forgotton, originated the mode of viewing the malady, as well as the plan of treatment I venture to question. In the work on 'Surgical Diseases,' Vol. X., this surgeon treats of "constriction with fissure," and the "constriction without fissure;" he ascribes to both the same symptoms, and makes the diagnosis between them to depend on the presence, in the former, of fixed pain at a point, together with an ulcer,—these being absent when the muscle only is affected. To illustrate the latter disease.—viz., the "constriction without fissure,"—three cases are given; but, upon looking into the details of these, I find, that, while one contains no account of the examination of the rectum, and is therefore to be set aside as valueless, it is said of the other two, that increased pain was excited in each by pressure upon a particular point, and, likewise, that at the painful point, disease (an induration in one, excoriation or ulcer in the other) was felt during the examination. The cases, therefore, plainly do not bear out the author's own general statement respecting the characteristics of the disease they are adduced to exemplify; indeed, there cannot, it seems to me, be a doubt that they were examples, not of an idiopathic affection of the sphincters, but of disease of the mucous membrane, with sympathetic spasm of those muscles, and therefore analogous, in all respects, to cases detailed in an earlier part of these observations.

But, before we part with this subject, it should be clearly understood, that there is occasionally no inconsiderable difficulty in discovering the local ailment. In one instance, it was only after a protracted search that the diseased point was discovered, (Case *c*). In this case, too, not only was the morbid part very minute, but there was an absence of any special tenderness upon pressure being made over it. Still the cure was effected by division of the mucous membrane at the suspected point. —*Medical Times and Gazette, July* 24, 1852, *p.* 81.

88.—*Chloride of Zinc Paste in Fistula in Ano.* By E. LACY. Esq., Poole.—[Mr. Lacy recommends the application of chloride of zinc paste in fistula, on account of the perfect success resulting from it in three cases. It is applied as follows:]

The ordinary paste, (chloride of zinc, water, and flour), being entangled in a grooved probe, is passed up to the opening in the rectum. The point of a second probe or instrument is then placed in the groove, and passed just sufficiently high up, that, by its being retained in that position while the armed probe is withdrawn, the groove may be cleansed of the paste. This may be repeated every second or third day. —*Med. Times and Gazette, June* 5, 1852, *p.* 576.

89.—CASE OF WOUND OF THE ABDOMEN.

By ARCHIBALD BLACKLOCK, Esq., late Surgeon R.N., Dumfries.

[This accident occurred to a boy between nine and ten years old, while bathing, by his falling upon a broken wash-hand basin. A wound thereby was inflicted, three inches in length, commencing a little below the umbilicus, nearly to the pubis, through which the greater part of the small intestines, transverse arch of the colon, and the omentum, immediately protruded. Mr. Blacklock continues:]

When I first saw him, he had been lying upon the bank of the river upwards of an hour, and the protruded parts, which were chiefly hanging over his left thigh, had evidently been in contact with the ground, for a considerable quantity of sand, withered grass, and other extraneous matters, adhered to them; and, from long exposure to the atmosphere, and fruitless attempts on his own part to force them back into the abdomen, they had become of a deep red colour. Twenty minutes more elapsed before a supply of warm water and a sponge could be procured from Nunbank House, the nearest residence; and the washing of the intestines and mesentery, which was chiefly done by allowing the water to flow over them from the sponge, also occupied a considerable time before they could be replaced, as the poor boy complained, in the most pitiable and distressing manner, when the parts were much touched with it, and occasionally said, in a whhisper, "Just kill me." The reduction even was by no means so simple and easy a process as some might suppose; for it frequently happened that patches of sand, &c., which had not previously been observed, were brought into view, as convolution after convolution of intestine was about to be replaced, and of course had to be washed off before the operation could be proceeded with. I may therefore safely say, that it was fully an hour and a half from the time that the intestines were immersed in the cold river until they were fairly returned into the abdominal cavity. The whole, however, being replaced, and the omentum spread out, so as to come as much as possible between the intestines and the external wound, the lips of the latter were immediately approximated, and secured in contact by three interrupted sutures, which were afterwards supported by strips of adhesive plaster. The unfortunate boy was now conveyed to his father's house in Dumfries, about a mile from the place where the accident occurred; and three hours after, when reaction had fairly commenced (for, in the first instance, or at least, from the time of my arrival, he was pale and almost pulseless, although little or no hemorrhage had taken place), twelve leeches were applied, and a grain and a half of calomel, combined with one-twelfth of a grain of opium, directed to be given every two hours.

April 11th, 9 a.m. Has passed a pretty quiet night. Leeches bled freely, encouraged by warm fomentation; pulse 124, and of moderate strength and fulness; abdomen is tense, tender, and tympanitic; complains of thirst, and occasionally vomits soon after drinking; has made water twice; twelve more leeches to be applied to the abdomen, and the calomel and opium continued. 1 p.m.—Pulse 140; complains of no uneasiness unless the abdomen is touched; thirst urgent; still occasionally vomits after drinking; the bleeding from the leech bites has been very copious. 10 p.m.—Is much in the same state as at last visit; pulse 144.

April 12th.—Has had another quiet night, and feels quite easy when not moved or meddled with; pulse 122, and of moderate strength; skin comfortably warm and soft; tongue rather moist; thirst, however, continues, and he still vomits the milk and water, which he prefers for drink, but not so often as formerly; urine abundant, and of normal appearance; tension and tenderness of the abdomen have not increased; and the edges of the wound remain in contact. Six p.m.—The tension and tenderness of the abdomen have evidently increased since morning; pulse 124; apply ten leeches, and continue the calomel and opium. Nine p. m.—Leech bites bleeding freely; abdominal tension and tenderness rather less; pulse 122.

April 13th, Ten a.m.—The swelling and tenderness of the abdomen considerably diminished; pulse 114, soft and natural; thirst less; urine copious; gums tender. Calomel and opium to be discontinued; has taken altogether forty-five grains of the former, and two and a half grains of the latter. Nine p.m.—Progresses favourably; pulse 104.

April 14th, Eleven a.m.—Has had a good night, says that he feels quite well, and is very hungry; pulse 104, and rather full; thirst moderate; urine still copious, but the bowels have not moved since the accident; had an evacuation, however, shortly before that event. To have a little arrow-root at any time he may wish to have it. Nine p.m.—Pulse 94; tongue moist and clean. A suppository of common brown soap to be placed in ano.

April 15th, Ten a.m.—Bowels have moved three times since yesterday evening; evacuations of a healthy character; no discharge from the wound; and the dressing has not been interfered with.

April 17th, Ten a.m.—Removed the plaster and sutures; wound seems well and permanently closed—nicely healed by the first intention, except at one point, where a little of the omentum, not larger than a garden pea, protrudes; touched this with nitras argenti; appetite good. To have beef-tea and bread.

April 18th.—Has had no evacuation from the bowels since the 15th. To have a gruel enema, and to be allowed porridge and milk morning and evening.

April 19th.—The bowels have moved twice since yesterday, when the enema was administered, both evacuations of natural appearance, and well formed. From this period he daily gained strength. On Monday, 5th May, returned to school; and up to this date continues perfectly well.

Remarks.—The above case of wound of the abdomen, with free protrusion and long exposure of the intestines—not to speak of their being previously immersed in cold water, and afterwards covered with sand and dirt—appears to me worthy of being recorded, as it furnishes a good instance of perfect recovery under very unfavourable circumstances; and shows what may sometimes be expected and prognosticated, even in the worst of cases, provided the coats of the intestines have not been penetrated, when the protruded parts are carefully replaced, the wound closed, and the patient frequently seen and prescribed for (but not too officiously) as symptoms seem to indicate. In this instance the patient had enjoyed excellent health up to the time of the accident, and possesses a fine quiet amiable temper. Indeed, a more tractable and heroic patient never came under my observation, either at home or abroad—in peace or war; and his composed state of mind no doubt greatly facilitated the healing and restorative process, and conduced to his rapid and complete recovery. The total prohibition of food, if we except the milk which was mixed with his drink, during the first four days, and strictly avoiding the employment of purgatives during the whole treatment, are also circumstances not to be overlooked.—*Monthly Journal of Medical Science, July,* 1852, *p.* 30.

90.—*Irritable Rectum with Constipation.—Treatment by Opiates.* Under the care of Dr. Barlow.—Among the diseases to which the aged are subject, constipation is one of the most common, and an irritable condition of the lower bowel one of the most distressing. As the two affections are commonly antagonistic to each other, their occasional concurrence may perhaps seem to require some explanation. The fact is, the irritability affects not the whole rectum, but merely its outlet, and the costiveness, easily permitted by the torpidity of the upper tract, is chiefly due to the painful condition of the anus, which induces the patient to avoid as much as possible all efforts for the expulsion of fæces. Thus, the two states act, and re-act to the exacerbation of each other; the hardened matters give pain in the passage, and the fact of their doing so induces their retention for a longer time than ordinary, thus permitting of their becoming still more indurated. Not unfrequently this painful state of the verge of the rectum is accompanied either by small hemorrhoidal excrescences, or by cracks and superficial fissures in the skin, just at its point of junction with the mucous membrane. We have lately seen several severe cases of this description among the patients under Dr. Barlow's care, and have been much pleased with observing the result of a plan of treatment which mainly consists in the free administration of opiates. It is only by a correct appreciation of existing conditions, both local and general, that the probable effect of any given remedy can be with any certainty predicated. This truth forgotten, the results obtained by medication will often seem inexplicable, or even the known properties of our most familiar drugs reversed. Thus, in the affection under consideration, the use of opium is almost always followed by gentle relaxation of the bowels, not because that drug possesses any purgative properties, but simply because it relieves the condition on which the constipation depended.

Sarah James, aged 66, thin, and rather pale, was admitted Sept. 3, 1852, on account of obstinate costiveness, attended with great pain each time the bowels were relieved. Seven years previously she had suffered from piles, which were then excised, and left wounds which did not heal for a considerable time. Ever since that operation, more or less pain and smarting has existed about the anus, and the bowels had progressively become more and more difficult to move. She had been in the constant habit of taking purgatives, chiefly castor oil, of which a very full dose was usually necessary to produce any effect. Blood was occasionally passed, and slime and matter very frequently. She had been under much medical care, but for several years had never known what it was to pass her motions without great pain; the discharge of pus had, however, decreased of late. During the week previous to admission her sufferings had been much aggravated: there had existed an almost constant desire to go to stool, on which occasions nothing except a little dirty water passed, and the repeated use of glysters and large quantities of castor oil had only succeeded in removing small portions of scybalæ.

On admission, she was first subjected to an examination by Mr. Poland, with a view to ascertain whether any disease existed about the parts capable of relief from surgery; but, as nothing was found, Dr. Barlow retained the case under his care, and prescribed for her pil. sapon. c. opio gr. v. ter die.

Sept. 12.—The pain about the anus has nearly disappeared, and the watery evacuations have ceased to occur. This morning an almost natural motion passed without producing much pain. Pt. pil.

17th.—She still feels in a very comfortable condition, but the bowels do not act quite so much as could be desired. Rep. pil., cap. ol. ricini ʒij. alternis auroris.

Oct. 12.—The same plan of treatment has been continued up to the present date. The bowels have acted regularly once or twice after each dose of oil, and without any pain whatever. In these respects, she states that she has not been so comfortable for many years. The opium has not in any way disagreed with the digestive functions, but appears, as is not unfrequently observed in old people, to have had quite a beneficial effect on the system generally.—*Med. Times and Gazette, Oct. 30, 1852, p.* 437.

ORGANS OF URINE AND GENERATION.

91.—ON STRICTURE OF THE URETHRA.

By Prof. Syme.

There are two forms of this disease in which mere dilatation has been found inadequate to afford relief; and it is these that I now wish more particularly to make the subject of observation. In one of them, the contracted canal is so extremely irritable that the introduction of an instrument aggravates instead of alleviating the symptoms, and exposes the patient to various dangers from the local and general disturbance thus excited. In the other the peculiarity consists in a contractile tendency so strong as quickly to counteract the effect of dilatation, and thus render it useless. These two conditions of stricture—the irritable and contractile—long constituted one of the greatest opprobria of surgery; and placed a practitioner in the painful position of either allowing the disease to proceed unchecked, or attempting to remedy it by means not only useless, but injurious. In order to overcome this difficulty, I tried a plan different from any previously employed, which consisted in the introduction of a grooved director through the stricture, and free division of the contracted part of the canal by external incision upon the guide thus afforded. I have now performed this operation in upwards of sixty cases—in every instance with the effect of accomplishing complete dilatation of the stricture, and entirely removing the patient's symptoms; and without hemorrhage or any other serious bad consequence. The safety and efficacy of the treatment being thus established, the only room for question in regard to the estimation of its value is the permanency of recovery. I am here able to say, that in cases of the very worst kind, the relief may prove permanent, the patient requiring no farther assistance, or merely the introduction of a full-sized bougie at distant intervals; and if this be the fact, it seems reasonable to expect that the result admits of being rendered uniformly favourable through attention to the circumstances concerned in determining its success and failure. An imperfect division of the contracted part—want of care to pass instruments while the urethra is healing, as all injuries of the canal are apt to occasion strictures when this precaution is neglected—and subsequent exposure to a repetition of the causes which give rise to the disease—may prevent the advantage gained from lasting so long as could be desired. The first of these circumstances tending to cause relapse did not originally occur to me, but was suggested by facts falling under my observation, which led to the persuasion that as a stricture gives the canal a sand-glass form at the part affected, it is not sufficient to cut merely the narrowest portion—the conical-shaped contraction on each side of it also requiring division; so that, instead of being limited to a quarter or half, the incision should extend a whole inch through the coats of the urethra. In regard to the after-treatment, as wounds and bruises of the urethra are apt to induce strictures, unless a full-sized bougie be passed occasionally until the part affected recover from the injury which it has sustained, there can be no doubt that if this precaution is neglected after the operation for stricture, there must be a risk of relapse. And it is no less obvious, that however perfectly the patient may be relieved from an existing stricture, he cannot reasonably claim exemption from the production of another, if he exposes himself to the exciting causes. It will, therefore, be prudent to enjoin such a mode of life as may, as far as possible, afford protection from the influence of circumstances calculated to act in this way. With due attention tò all these points, it is, I think, reasonable to expect that the obstinate forms of stricture in question may be effectually remedied by an operation of the utmost simplicity and most perfect safety; and that the relief will generally, if not always, prove permanent. The case which has led to these remarks is thus related in the hospital books:—

"Thomas Atkinson, aged 34, a tall, well built man, of healthy appearance, was admitted into the Surgical Hospital, May 20th, 1852. Is a native of the county of Armagh,—and has been sent thence by a surgeon, who has treated him for stricture of the urethra for upwards of two years.

"The following is the history he gives of his complaint:—Rather more than two years ago, after exposure to wet and cold, he was attacked with a discharge from the urethra, unaccompanied by pain or scalding. Previous to this, he had not noticed any diminution of the stream in which he passed his water, but soon afterwards it decreased rapidly. The surgeon, after treating the disease constitutionally for a short time, passed a small bougie, and discovered a stricture at the anterior part of the scrotum. This was quickly dilated, so that No. 10 could be introduced with ease; but, notwithstanding, his micturition was in no way improved. In an hour or two after the instrument had been withdrawn, the stream was as small as ever. Frequently he suffered from complete retention for hours together, and was only relieved at length by having an instrument passed, immediately after which he could make water in a tolerable stream, and without pain or effort. In consequence of the continuance and obstinacy of the complaint, 'caustic' was applied, eighteen months ago, to the strictured part of the canal. It caused him great pain at the time, and the difficulty afterwards in voiding urine was considerably increased—the stream was smaller—the retentions more frequent—and the pain and discharge much greater. Three months after, the 'caustic' was again applied, and again his sufferings were aggravated; a hard knot appeared on the urethra, opposite the seat of stricture, and he was rarely able to pass a drop of urine without first introducing a bougie. A year ago, a third application of the 'caustic' was made, and he was directed to keep a large elastic bougie, No. 10, constantly in the urethra, and never to remove it except when he desired to pass water. He wore it for two months night and day; and during this time did not suffer any pain or inconvenience, beyond that arising from the instrument. Two days after renouncing its use, all the symptoms of stricture had returned as severely as before, and ever since he has been obliged to pass an instrument before micturating. During the last three months he has always carried a common fowl's feather, about the size of a crow's quill, in his pocket, and has used this instead of a bougie, passing it through the stricture, allowing it to remain for about a minute, and then withdrawing it; he has been able to pass his water in a good stream. If he neglects to make water for many minutes after taking out the quill, he is obliged to re-introduce it before he can pass a single drop.

"On examination, No. 6 bougie is found to pass without difficulty fairly into the bladder. A stricture is encountered three inches and a half from the meatus, which gives way readily upon slight pressure, but grasps the instrument when withdrawn; and at a corresponding part externally, a narrow thickened induration is felt by the fingers placed on the under surface of the urethra."

This case affords a very distinct example of the contractile form of stricture, and well illustrates the futility of dilatation as a means of remedy for this condition. In all strictures remediable by dilatation, nothing can be desired better than the simple metallic bougie, which, introduced gently at sufficiently long intervals of time, excites absorption of the thickened canal, and gradually restores it to a healthy state. But the would-be improvers, who propose to dilate the urethra upon the same principle as they would stretch the finger of a glove, will meet with little success, except in those cases, of no rare occurrence, where the contraction exists only in imagination; and whether they attempt to accomplish their object by separating the branches of an instrument passed through the stricture, or endeavour to do so by introducing a succession of tubes upon a guide—after the fashion of that curious contrivance, the "Dublin Railway Catheter"—will either effect no good that could not have been attained more easily and safely by the bougie, or seriously endanger the life of the patient. The patient being now placed upon the table with his knees bent, and supported so as to expose the perineum, I introduce a grooved director through the stricture, and then, while the scrotum is held up, make an incision about an inch in length through the integuments, exactly in the line of the raphé. I next insert the knife into the groove of the director below the stricture, and push it forward so as to divide the contracted part of the canal nearly to the same extent as the external incision. The director being withdrawn, I pass a silver catheter (No. 8), into the bladder, and secure it by proper tapes. The operation, you see, is thus completed in less time than would be required for its description, with the loss of not more than a teaspoonful of blood, and with so little pain, that a smile has never left the patient's good-humoured intelligent countenance.—*Monthly Journal of Med. Science, July* 1852, *p.* 33.

92.—STRICTURE OF THE URETHRA AND PERINEAL SECTION.

By WILLIAM COULSON, Esq., Surgeon to St. Mary's Hospital.

[Mr. Coulson in remarking upon a case he had related in a lecture upon this subject, observed that it brought forward the questio vexata as to whether the operation of perineal section, as performed by Professor Syme, for the cure of certain forms of permanent stricture of the urethra, should be admitted as an established practice, or should on the other hand, be discarded altogether from the domains of surgery. Mr, Coulson remarks:]

Before arriving at the question of perineal section, it may be well to offer a few remarks on strictures and their treatment in general. Stricture of the urethra, as the word implies, is a narrowing or contraction of the canal at some point; but the cases to which stricture, in the sense I now use it, applies, are those in which the preternatural diminution of the calibre of the canal depends on organic change in its walls or in the subjacent tissues. It is thus distinguished from obstructions produced by tumours, scrofulous deposits, abscesses, &c. The contraction of the canal may be either temporary or permanent; that is to say, spasmodic or organic. I have now to deal with the latter kind only. It arises in all cases, I believe, from more or less inflammation of the mucous or sub-mucous tissues of the urethra at certain points. In many cases of stricture, particularly those of recent date, the mucous membrane of the urethra is alone involved. It is injected, has become thicker than natural, is more dense, and has lost its normal elasticity. It is probable that more or less congestion of the submucous tissues exists to a slight degree, but this has disappeared after death. In more chronic cases the subjacent structures are also involved; and here the mucous membrane of the affected part may sometimes present so much of a natural appearance as to lead one to imagine that it had never been attacked by the inflammatory process. It is, however, presumed that the inflammation has extended from the mucous to the subjacent tissues, and that, as the latter became affected, the former regained its natural aspect from the subsidence of the inflammation. Yov are not, however, to consider that the organic changes which take place in stricture are confined to the mucous lining of the urethra. In the vast majority of cases of permanent stricture which have continued for any length of time, chronic inflammation has extended to the tissues surrounding the parts primarily affected, and has produced a series of changes which it is of great importance that you should be familiar with. These changes materially affect the treatment that ought to be adopted for the relief of stricture, and, as you will presently perceive, they bear an important relation to the question of perineal section. They have been too much overlooked by the majority of surgeons who have written on stricture of the urethra; but they were not overlooked by him to whom modern surgery owes so much—I allude to John Hunter. In his admirable collection you will find the pathological effects of stricture illustrated in every form and degree, from the most simple to the most complicated cases; and you cannot spend a few hours better than in an attentive examination of them.

The most usual form of change in the extra-urethral parts is chronic inflammation of the tissues immediately subjacent to the points of the canal in which the stricture was primarily formed. These tissues become more or less hypertrophied; the interstices are filled with coagulable lymph; and as this becomes gradually organized, the tissue is converted into a dense fibrous substance of great resisting power. Sometimes the tissue becomes uniformly dense and callous. In many other old cases the mucous and submucous tissues are confounded together into a hard compact mass in which no distinction of tissue can be traced; the spongy tissue has been involved, and forms a hard, thick wall round the canal, pressing it so closely that hardly a drop of urine can pass outwards, or the finest bougie be introduced into the bladder. Sometimes a very large extent of the corpus spongiosum is converted into a ligamentous substance; in other cases the induration is fibrous; these latter usually occur in the neighbourhood of the bulb, and are extremely obstinate against dilatation. These long and hard indurations are often so prominent that they can be distinguished by pressure on the perineum. I have insisted at some length on these pathological changes, because it is necessary for you to remember that stricture is hardly ever, in old cases at least, confined to the mucous wall of the urethra, and because a knowledge of these changes will better enable you to appreciate the various modes of treatment which have been proposed for the cure of stricture.

But the immediate and proximate effects of stricture on the neighbouring tissues are not the only ones we have to consider. It will be impossible for you to pass any correct judgment on the relative value of different curative methods, without having some idea of the various changes which follow consecutively on stricture of the urethra. The slightest contraction of the canal may give rise to a number of secondary effects; while those resulting from long-standing or severe stricture are of the most formidable nature, and often terminate in death. All these secondary effects are more or less connected with the obstacle opposed by the contraction to the free discharge of urine. One of the earliest and most common is inflammation of the urethra, behind the constricted point. This inflammation may be of various degrees: when of long standing it may give rise to ulceration of the walls of the canal, or the deposition of numerous small abscesses in its substance; when carried still further, where the stricture is so contracted as to produce from time to time complete retention of urine, the consequences are dreadful. The membraneous portion becomes dilated and irritated by the contact of urine highly charged with salts, and driven against it with extreme violence during the efforts to make water. The inflammation extends to the deep-seated tissues; the walls of the urethra may give way from laceration, or ulceration; the urine becomes extravasated into the cellular tissue of the perineum, threatening the life of the patient; and if, by prompt and decisive measures, this be preserved, fistulous openings in that part, with all their well-known consequences, may be established. In other cases, particularly when no artificial exit for the urine exists, inflammation involves the prostate gland, giving rise to hypertrophy or abscess in the substance of that organ. The bladder itself is often attacked with chronic cystitis; its walls become thickened; pus is secreted; the inflammation extends to the ureters; and, finally, the kidneys themselves become involved. It is unnecessary for me to enumerate the constitutional symptoms which accompany such a state of things. Even where the secondary lesions are less severe, the patient always suffers more or less in his general health; he is subject to frequent rigors, with febrile accesses; he loses flesh, and becomes irritable; the digestive organs become disordered; the constant dribbling of water renders him an object of disgust to himself and others, while the constant desire to pass his urine prevents him from enjoying a single night's sleep. In short, it is difficult to conceive a more distressing state than the one to which so many patients labouring under old stricture are reduced. Hence the desire which they generally express to be relieved of their disease at any risk.

Stricture of the urethra is most frequently met with at the anterior part of the membraneous portion of the urethra, or in the spongy portion. It sometimes happens that both parts are affected at the same time; and authors speak of as many as six, seven, or eight strictures in the same individual. In such cases, the canal may become tortuous, and almost obliterated at several points; and the same effect may arise from long indurated stricture in the spongy portion of the urethra. Mr. Syme denies that any stricture as ever "truly impermeable." But this is a serious error; into which M. Amussat has likewise fallen. Even if we lay aside the cases in which some of the most distinguished and dexterous surgeons in this and other countries have failed to pass any kind of instrument after repeated efforts, we have proof, from post-mortem examination, of the complete impermeability of the urethra. In Chopart's work on the Urinary Organs (page 323), you will find an example of complete obliteration of an inch of the canal, observed in a dead body. M. Delmas observed a similar fact at the Hôtel Dieu. M. Cruveilhier relates another in his 'Pathological Anatomy.' Besides, we can readily understand, from analogy, how an inflamed part of a contractile canal may become totally impermeable, whenever the fluid to which it gives passage in a normal state is turned away into another channel.

Let us now, briefly consider the means usually employed for the treatment of stricture of the urethra. You must have a clear idea of these different methods, of the effects each is intended to produce, and of the cases to which they are respectively applicable, in order to understand why any preference should be given, under certain circumstances, to the perineal section.

The surgical treatment of stricture may be described under three heads—viz., dilatation, cauterization, and division. I shall not detain you long on either of the former, as I hasten to arrive at division, which more immediately concerns us in connexion with our case.

The treatment of stricture by dilatation has been conducted on very different principles by different surgeons. Sometimes the dilatation is momentary and gradual, the bougie being allowed to remain in for a few minutes at a time, and the size of the instrument gradually increased, until the diameter of the strictured part acquires the same size as that of the rest of the urethra. This method is applicable to a large number of cases, and is the one usually resorted to by the great majority of surgeons in this country.

The second mode of employing dilatation may be called the permanent, for the instrument is allowed to remain constantly in the bladder. The object here is not only to dilate the canal, but by the pressure of the instrument to excite such a change in the vital properties of the parts as shall lead to absorption of the effused coagulable lymph in the subjacent tissues. The case to which permanent dilatation, either by metallic sounds or the gum catheter, is most applicable, are, according to Sir Benjamin Brodie—

"1st, cases of old gristly or cartilaginous strictures, which the common bougie is incapable of dilating; 2nd, cases complicated with false passages; 3rd, cases where the urethra has become irregular in shape; and 4th (finally), those in which each introduction of a bougie is followed by rigors or constitutional disturbance."

Some surgeons have not hesitated to employ what I would denominate forcible dilatation in the treatment of stricture. A solid conical bougie, or sound, is forcibly passed or thought to be passed, by some, through the stricture. No surgeon in this country would think of having recourse to the forcible catheterism of Boyer. Other surgeons have invented ingenious instruments, which open after they have been passed beyond the stricture, and dilate it gradually; and in some cases in this hospital this plan has been adopted with success.

Although the treatment of stricture by dilatation is the one most generally used, and the one, moreover, attended with the most beneficial effects, it is not free from objections. Permanent dilatation of old and firm strictures can seldom be effected without giving rise to more or less irritation and other unpleasant accidents. The instrument may produce little pain at first, but it often becomes intolerable; the passage of the urine over the points which it has irritated also excites severe pain; the constitution sympathizes, fever sets in, with rigors, &c., and the patient refuses to continue the treatment. Another objection which has been made to the method by dilatation is, that the relief which it affords is seldom permanent. The patient fancies himself cured as soon as he can make water with comparative facility; but this amelioration is often of short duration. Within a short time after the withdrawal of the bougie, the urethra suddenly contracts, and the difficulty of making water becomes as great as ever. This is a fact familiar to all surgeons. Permanent dilatation seems to act in an unfavourable manner on the sensibility of the canal, which is made to pass suddenly from a state of contraction to one of forced distension; the elasticity of the canal is not restored by it, and the cure is consequently less durable. Finally, dilatation by bougies is inadmissible in certain cases of hard and very irritable stricture of the spongy portion of the urethra—a point to which I shall again refer.

Cauterization of the stricture was employed by the surgeons of the fifteenth century, who considered stricture as consisting in vegetations or fungous growths. Recommended by John Hunter, it has been extensively employed in this country by Mr. Whateley, Sir Everard Home, and Mr. Wade; and in France by Ducamp and Lallemand. The substances employed for cauterization are the nitrate of silver and potassa fusa. They are usually applied to the anterior surface of the stricture by means of a bougie, the extremity or point of which is armed or charged with one of these substances. Some of our best surgeons consider the application of caustic substances to the anterior wall of an impermeable stricture, the extent of which we have no means of ascertaining as highly dangerous. I do not entertain this fear, having myself used the armed bougie extensively. My difficulty has been the inability to do good in some cases with this agent. Perhaps I might resume the general opinion of the profession in saying, that cauterization is chiefly applicable to ring strictures of the membranous portion of the urethra, accompanied with a tendency to spasm.

We now arrive at the third general method of treating stricture—I mean that by incision of the strictured part. Here we have a capital distinction to make, according as the incision is made from within outwards, or from without inwards; the former comprising the scarifications and incisions of Mr. Stafford, MM. Amussat, Leroy d'Etoilles, and many others; the latter including the old French operation of "la boutonnière," and Mr. Syme's modern one of the perineal section.

Division of the stricture from within outwards is an operation on on which it is not easy to pass a correct judgment, from want of a sufficient number of facts. It is certain that the instruments now employed enable us to perform the section without danger of cutting too far; and one of the great objections against the method is thus obviated, when judiciously employed it may be of use in some cases of hard and long stricture, situate not very far down in the urethra ; but it cannot, for obvious reasons, be applied to strictures which only admit a very small instrument, still less to those that are completely impervious. It remains then to consider the perineal section, or division of the stricture from without inwards, through an incision of the skin, tissues of the penis, and walls of the urethra.

Before describing the operation of perineal section, I may say a word or two on its history. Mr. Syme was the first, in this country, who proposed and practised division of the stricture from without inwards, on a grooved instrument, introduced by the orifice of the urethra through the contracted point, and with the idea of curing the stricture itself, not of merely relieving any retention of urine which may be consequent on it; but an operation somewhat similar to this was well known to, and often practised by, the French surgeons more than a hundred years ago. In Desault's treatise on Diseases of the Urinary Organs, edited by Bichât (t. iii. p. 330), I find the following passage. Speaking of the boutonnière, or button-hole incision of the urethra, Desault says, "On ne suit pas toujours le meme procédé en pratiquant la boutonnière sur le canal de l'urétère. Lorsque l'on peut introduire un cathéter dans la vessie, on se sert de cet instrument pour faire sur sa cannelure l'incision du canal et conduire une gorgeret. Ici l'opération ne presente pas plus de difficulté ni de danger que l'incision pour la taille au grand appareil. Mais aussi elle n'effre aucun avantage dans le traitement des rétentions d'urine ; car, puisque on a pu introduire un cathetér, il eût été également possible de passer une sonde, qui eût servi á l'évacuation de l'urine et rétabli par son séjour la liberté du canal."

This passage clearly proves that the old operation of "la boutonnière" was sometimes performed, not only by passing down a grooved director to the anterior edge of the stricture, but also by passing the instrument *through* the strictured point into the canal. This latter manœuvre executed, the perineum was divided into the stricture slit open on the director.

The operation alluded to by Desault is supposed by some to have been merely employed for the relief of retention of urine, and not as a remedy for stricture of the urethra. This is an error; for on consulting Desault in the original, at page 245 of his work, where he treats of stricture, and not of retention, I find the following words:—"L'opération connue sous le nom de la boutonniére quoique en apparance mieux adaptée à la nature de la maladie, est presque toujours ou inutile ou dangereuse. Elle est inutile, si pour la pratiquer on peut passer un cathéter, ou une sonde cannulée; puisque alors on aurait pu de meme y porter une sonde creuse: Elle est dangereuse, si l'on ne peut etre guidé par ces instruments; puisque alors on fait les incisions au hazard, et que l'on peut manquer le canal, et diviser des parties dont la lesion est suivie d'accidents plus ou moins graves. Les caustiques recommandés par Hunter nous paraissent tout à la fois incertains dans leurs effets et très dangereuses dans leur suite."

"The operation known under the name of boutonnière, though apparently better adapted to the nature of the disease, is almost always either useless or dangerous. It is useless, if the surgeon has been able to pass a grooved director, for the purpose of operating; because, in such case, he might just as well introduce a hollow sound. It is dangerous, if the surgeon has no director to guide him; for then he makes his incisions at hazard, may miss the canal, and divide parts the lesion of which is followed by more or less serious accidents. The caustics recommended by Hunter, appear to me both uncertain in their effects, and very dangerous in their consequences."

Again, Chopart distinctly speaks of the boutonnière, or a mode of operating for stricture, independently of retention of urine. At p. 310, vol. ii. of this work on the Urinary Organs, he says:—"The indurations and callosities of the walls of the urethra, the bridles and cicatrices of this canal, form the chronic and permanent strictures which most frequently oppose the passage of the catheter." He then discusses the treatment of stricture by bougies, caustics, &c.; and at p. 313, speaks of the boutonnière as a mode of treatment, giving a case in which he tried it, but failed. I mention these facts in no way to detract from Mr. Syme's merit, but to show that the operation had been previously entertained by the French surgeons.

As far as I have been able to make out, the boutonnière was performed in three ways. The first is that noticed by Desault, and identical with Mr. Syme's operation. In the second mode a grooved director was passed down to the impermeable stricture and pressed close against its anterior surface; the surgeon now cuts down through the perineum on the director, and when he has arrived at the groove he continues his incision forward through the stricture until he has divided it through its whole length and is able to pass a catheter into the bladder. The third method of performing the boutonnière is the one now, I believe, generally adopted by the French surgeons. A grooved director is passed down to the anterior surface of the stricture, as in the former method, and there firmly held by an assistant. The surgeon now cuts down on the membranous portion of the urethra, which he opens, and passes a curved director from behind forwards, holding its point as much as possible in the same line as that of the instrument introduced through the orifice of the urethra. In the majority of cases, the instruments would come very nearly in contact, and serve as a guide to the incisions made through the stricture. It may be objected that it is a difficult matter to cut down on the membranous portion of the urethra without any guide; but the surgeon who has a competent knowledge of anatomy cannot find much difficulty in the operation, and without a knowledge of anatomy he has no business to practice the operative part of the profession. This is the operation recommended by Mr. Guthrie in his lectures on stricture, recently published.

I must now describe to you Mr. Syme's operation, or the perineal section, and I will employ his own words. The patient having been placed under the influence of chloroform, is "brought to the edge of his bed, and his limbs are supported by two assistants, one on each side. A grooved director, slightly curved, and small enough to pass readily through the stricture, is next introduced, and confided to one of the assistants. The surgeon sitting, or kneeling on one knee, now makes an incision in the middle line of the perineum or penis, wherever the stricture is seated. It should be an inch or an inch and a half in length, and extend through the integuments, together with the subjacent textures exterior to the urethra. The operator then taking the handle of the director in his left hand, and a small straight bistoury in his right, feels, with his fore-finger guarding the blade, for the director, and pushes the point into the groove behind, or on the bladder side of the stricture, runs the knife forwards, so as to divide the whole of the thickened texture at the contracted part of the canal, and withdraws the director." A silver catheter is now allowed to remain in the bladder for forty-eight hours, after which it is to be withdrawn. After eight or ten days a moderate-sized bougie should be passed, and its introduction repeated once every week or fortnight for two months. Mr. Syme makes it an indispensable condition of his operation, that the stricture should be permeable; in other words, should admit the passage of an extremely small director at least; and in order apparently not to limit the usefulness of his operation, he asserts that there is no truly impermeable stricture. He also condemns, in unmeasured terms, the old operation of cutting into the perineum in search of the obstructed canal, without any further guide than the point of a catheter, introduced, not through, but merely down to the contracted point.

I shall now endeavour to explain to you on what principles it appears to me that the operation of perineal section, in its most extended sense, should be adopted. To my mind, the term perineal section should be applied to an operation in which the strictured part of the urethra is divided from without inwards, no matter whether the surgeon has been able to pass a director or not, or whether he carries his incision of the stricture from before backwards, or from behind forwards. These latter circumstances merely affect the safety and facility of the operation, without in any way altering the principles on which it is conducted. You will now naturally ask me what are these principles? You may desire to be informed, whether, as some distinguished surgeons affirm, the perineal section should be banished altogether from the practice of surgery; or to know, admitting its usefulness, in what cases, and under what circumstances, you may be justified in having recourse to the operation? These points I shall now endeavour to clear up, though with a certain degree of diffidence; for I must confess to you, from the outset, that the profession is greatly divided on the subject. We must not, however, forget the old adage, "Doctors differ." Few important improvements have ever taken place in surgery without exciting much discussion and giving rise to considerable diversity of opinion. It has taken more than two hundred years to bring lithotomy to its present degree of perfection. I remember, myself, when lithotrity was condemned as an inefficient or even dangerous proceeding; and to come nearer home, consider how much the profession has been divided, ever since the days of John Hunter, on the utility of caustic for the treatment of stricture.

As for the perineal section, I am one of those surgeons who consider it for the most part easy of performance, exempt from any considerable danger inherent to the operation itself, and highly effectual for the relief of such cases as it is adapted to. It therefore remains for me to explain what these cases are; under what circumstances I think the surgeon may have recourse with advantage to the perineal division of a strictured urethra.

I am disposed to recognise two sets of cases in which the perineal section may be employed. The first set, where no instrument can be passed through the stricture. Mr. Syme, as I informed you, rejects all such cases; but I shall presently give my reasons for dissenting from him. The second class, where a curved director can be introduced into the bladder; and here Mr. Syme's operation, properly so called, is undoubtedly the most safe, easy and effectual proceeding that can be adopted. But this distinction of permeable and impermeable strictures is not enough. We must go further, and endeavour to determine what circumstances in each class should determine the surgeon to select external division of the stricture in preference to the other modes of treatment generally employed. Let us first consider impermeable stricture; and here, to avoid repetition, I would beg of you to recall to mind what I have already said on the changes produced by long-standing stricture in the tissues of the urethra, or subjacent parts; in the prostate, bladder, or kidneys; and on the general health and comfort of the individual.

Here is a case of old stricture of the urethra. The walls of the urethra are thickened and cartilaginous; you can feel the chord in the perineum. After many attacks of retention of urine, complete stoppage takes place; the patient suffers from the effects of that distressing occurrence; no instrument of any kind can be passed into the bladder; yet it is imperative to afford relief, or your patient will die. What is the surgeon to do in such a case? Many will answer: Puncture the bladder through the rectum, perineum, or above the pubis, and then proceed to treat the stricture. But the circumstances of the case may, as Mr. Bransby Cooper has justly observed, lead you to conclude that the fibrous and hardened textures will not yield to other modes of treatment, after the relief of the retention by puncture, but that the stricture will rather make progress, and tend to permanent obliteration of the canal. Dilatation is here out of the question, since no instrument can be passed.

There is no time for the use of caustics, even if their employment were suited to the case under other circumstances; and I cannot but think that the perineal section or boutonnière performed either according to the first, or perhaps better still, the third method, is the best operation that can be employed, not only for the relief, but for the cure of your patient.

In other cases, instead of retention of urine, we have laceration or ulceration of the urethra, with extravasation of urine and fistula in perineo. These accidents may have continued for a considerable time before you see the patient. It is impossible to pass an instrument; and you have reason to conclude that a large portion of the spongy tissue is reduced to a gristly chord. The advocates of caustic confess that they will probably fail to effect any benefit in cases of this kind; dilatation by bougies, or internal scarification, or division, is out of the question. Must the patient be abandoned to his fate? Does surgery hold out no hope of relief?

For the fistulous openings, all surgeons are agreed that they should be freely divided; and experience proves that the stricture may be divided at the same time by an incision carried forwards from the membranous portion of the urethra. Mr. Bransby Cooper has related two cases from his private practice, in which the operation was perfectly successful; and it may be safely affirmed that no other method would have been attended with such speedy and effectual relief.

What I have just said will apply equally to cases of impermeable and cartilaginous stricture occupying a considerable portion of the canal, but accompanied by constant dribbling of water, instead of retention. Although no instrument can be passed, the urine comes away in drops, and after violent efforts. Such cases often present themselves in practice.

The following case is an illustration of this form of the disease, and of the advantages of the operation for it:—William J., aged forty-four, was admitted into St. Mary's Hospital, October 13. He had been the subject of stricture eight years. At the commencement of 1849 he was seized with retention of urine, and has suffered from it occasionally ever since. At the time of his admission he passed his urine in a very fine stream, or only drop by drop. A firm obstruction existed five inches down the urethra, through which no instrument could be passed; just anterior to this there was a false passage. On the 15th of October I divided the stricture through the perineum; a grooved staff was introduced down to the stricture, and the urethra opened for an inch and a half just above it. The stricture was then divided, and the staff readily entered the bladder. This was withdrawn, and a No. 8 silver catheter introduced, and retained in the bladder forty-eight hours. There was a good deal of bleeding after the operation, but it stopped in the evening. A No. 8 silver catheter was introduced every third day whilst he remained in the hospital, and retained half an hour at each introduction. The patient had not had a single bad symptom; the wound healed readily, and the patient was discharged at the end of five weeks. I saw the patient two or three months after, and the largest-sized catheter could be easily passed into the bladder.

You will observe that the operation here performed was not Mr.

Syme's, properly speaking, but the old boutonnière. Mr. Syme rejects it altogether from practice, on the ground of its establishing an imperfect course, constantly disposed to contract, and inconvenient from its tortuous direction, and from the immediate hazard of failure in passing the catheter into the bladder. The operation, such as it is often performed here, is certainly more difficult than Mr. Syme's, and it may occasionally fail; but I would observe that, in the numerous operations for impermeable stricture by external incision, performed by Mr. Fergusson, Mr. B. Cooper, myself, and others, no serious difficulty—none the surgeon was unable to overcome—has as yet presented itself. Such a case might, however, occur; Chopart relates a remarkable one: but they are rare. Besides, I would again ask, what is the surgeon to do with such cases? He must either leave his patient to be worn out by a lingering and most painful disease, or he must make some attempt for his relief. The use of caustic potass is the only other alternative left; but the advocates of potass confess that it is not applicable to the cases now under consideration; and hence the boutonnière should, in my opinion, be had recourse to. In fact, nothing else is left for us to do. It seems, indeed, strange that Mr. Syme should reject the operation for cases in which it is the only possible remedy, and yet adopt it, with a slight modification, for others, when, the urethra being permeable, it might be alleged that cautious dilatation would afford great relief, if not effect a cure. The only valid objection against the operation is the difficulty of sometimes performing it, because we have no steady guide for the cutting instrument; but in these complicated cases much of the difficulty may be got over by employing the third species of boutonnière, which I have described.

We now come to Mr. Syme's operation for permeable stricture. No one pretends that this operation should be applied to the treatment of stricture indiscriminately. We have, therefore, to inquire under what circumstances the surgeon is justified in having recourse to it; for many of its opponents admit that it may be sometimes indispensable. Mr. Wade acknowledges that Mr. Syme's operation is applicable to cases "where much induration of the corpus spongiosum exists; for dilatation would only excite and increase the contraction, and we cannot hope to relieve the induration entirely by caustics." Mr. Wade would likewise extend the applicability of perineal section to some cases from mechanical injury of the urethra, where we have a hard gristly cicatrix, with perhaps fistulæ in the perineum; also to cases where the urethra has been lacerated, and a hard cicatrix has formed in the seat of the injury. Finally, cases of hard, contractile stricture, not the result of mechanical injury, which have resisted all other means of a milder nature, and where the powers of the patient are suffering considerably—here, according to Mr. Wade, perineal section may be required. This, you perceive, gives us a pretty wide field.*

The cases for the relief of which Mr. Syme originally proposed his operation are "those vexatious ones in which the constricted canal is unyielding, and manifests a constant tendency to contract, perhaps even more closely than before, after been partially or completely dilated." In these cases the constitution is much disposed to sympathize with every change in the local disease; rigors and febrile attacks often occur on every attempt to pass a bougie, and what have been called "milder methods" of treatment almost invariably fail to afford anything like permanent relief. This peculiarity of old strictures has been noticed by all surgeons. M. Civiale, to whom we owe so much for the diagnosis and treatment of urinary diseases, observes that the fibrous and indurated stricture which exists near the bulb of the urethra is extremely obstinate against every attempt at dilatation; and again, that when the stricture occupies a great extent of the spongy portion, is hard, and when the canal is much reduced in calibre, cauterization must be rejected, and dilatation is, for the most part, insufficient to produce a cure. The same distinguished surgeon likewise insists "that nearly all old strictures of the spongy portion of the urethra are so dense, so resisting, and have such a tendency to contract, that dilatation has little effect on them, while cauterization only seems to increase the state of irritability." You may, perhaps, obtain an explanation of these facts by remembering what I have said on the changes which the corpus spongiosum and subjacent mucous tissues so often undergo in old and severe strictures. In many cases of fibrous stricture, the parts surrounding the contracted canal are converted into ligamentous tissue of a highly contractile nature; and unless the tissue be carefully divided through, every attempt to cure by dilating or cauterizing will not only fail, but increase the disposition to contract, and prolong the treatment while it aggravates the disease.

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* In the 'Lancet,' July 3, p. 19, Mr. Wade corrects Mr. Coulson with respect to these quotations of his opinions. [See p. 266 of this vol.]

But there is one species of stricture—the form, indeed, under which my patient laboured—which has not been described apart by writers, although it is the one above all to which Mr. Syme's operation is especially applicable: I now allude to traumatic stricture. Here the complaint arises from some mechanical injury, falls, blows, &c., to the perineum, and it is at once the most severe and refractory form which the surgeon can meet. The case of complete obliteration of the canal, recorded by Cruveilhier, to which I have already alluded, was one of this kind; and although the urine dribbled away during life, the most careful dissections was unable to detect any trace of canal in the dense fibrous chord which constituted the stricture.

Traumatic stricture is often developed immediately after the receipt of the injury, but in other cases the contraction does not take place until many years afterwards. In my case, the patient had been struck by an iron bar eight years ago. M. Civiale relates another, where the characteristic symptoms of stricture did not appear until ten years after the injury. From the nature of the exciting cause you can readily understand how such strictures are often of considerable extent: authors mention several inches, but this is rare. However, it is certain that contractions of the urethra, from mechanical injury, are generally long; they are also hard. Another peculiarity of traumatic stricture, is its extreme tendency to contract. Even in cases where a bougie can be borne, and temporary improvement results, experience abundantly proves that the cure is far from being complete, for the contraction returns, and sometimes with remarkable rapidity.

In severe cases, as I have observed before, a considerable portion of the canal is contracted, and if to this state we join hardness, tenseness, and fibrous adhesion between the mucous membrane of the urethra and its subjacent tissues, you have a form of disease which defies all the modes of treatment hitherto employed.

"In such cases (says M. Civiale) even should a dexterous hand succeed in introducing a small sound, we must not count on obtaining a cure, no matter what treatment we employ, whether it be dilatation, cauterization, or incision (internal). I have seen every method of treatment fail, though continued for a long time and conducted with the utmost prudence."

Here then is the testimony of an impartial witness. Such cases of stricture are incurable by ordinary means. Must we abandon our patient? Does surgery afford no hope of relief? I think it does. It is in such cases, especially, that I would recommend Mr. Syme's operation. I shall briefly mention one of the cases in which I had recourse to it.

The case was that of a patient, aged 58, who had laboured under stricture for nearly thirty years. It had been divided by the lancetted stilette, and periodically dilated; but during the last two years it had become so much contracted as not to admit a No. 1 bougie. The water came away only drop by drop, and at times retention occurred, which was always relieved by the application of the potassa fusa. Mr. Syme's smallest grooved staff was passed, and an incision an inch and a half in length was made, commencing from close to the scrotum, and carried down towards the anus. The groove of the staff was at once reached, and the stricture divided. A No. 8 silver catheter was introduced, and a considerable quantity of fœtid, alkaline urine discharged. There was a little bleeding in the night, which was easily stopped by pressure. The catheter was retained in the urethra forty-eight hours, and introduced every third day for a fortnight, when the patient was enabled to resume his duties. At the present time the largest catheter (No. 10) which the orifice of the urethra will admit passes readily into the bladder.

Mr. Syme's operation is, as you perceive, both easy and safe, so far as the operation itself is concerned. Whatever difficulties the surgeon may experience in endeavouring to divide an impermeable stricture, there are none here. He cannot meet with any obstacle to cutting down on the groove of the director, or dividing the strictured parts, however dense or extensive the constriction may be; for the groove of the staff is a safe and easy guide, which will enable even the young surgeon to operate with comparative facility.

But various objections have been raised against the operation, both as regards its principle and its effects. These I shall now notice. Many surgeons criticize Mr. Syme's operation on the pretext that it has been proposed as a system of treatment for stricture in general; but this is an unfair statement of the case. Neither Mr. Syme, nor any advocate of his operation with whom I am acquainted, ever proposed perineal section as a general system. On the contrary, it has been expressly stated, over and over again, that division of the stricture from without inwards, should be confined to such cases as are not amenable to ordinary treatment; where the tendency to contract is so great as to leave no hope of cure from dilatation; where the irritability of the urethra is so excessive as to render the repeated introduction of bougies not only insupportable from pain, but dangerous from the constitutional disturbance they excite. Such cases frequently occur, and we might fairly ask those who reject Mr. Syme's operation unconditionally, what other mode of treatment they would recommend under such circumstances?

Dilatation is inadmissible; cauterization is also inapplicable in many of these cases, from the seat, extent, and nature of the stricture. You must, therefore, either divide the strictured parts, or wait; and if you wait too long, the continued and increasing impediment to the discharge of urine will, in nine cases out of ten, reduce your patient to a state of insupportable distress, if not irremediably compromise his existence by the secondary effects produced on the prostate, bladder, kidneys, and general health.

The next objection offered to division of the stricture is its insufficiency to effect a radical cure; after some months or years, it is said, the disease returns as bad as ever. We have not yet sufficient experience of Mr. Syme's operation to decide this point in a positive manner. Relapses may, and do, occur. The operation is not infallible, but I think I may safely say that relapses are not so frequent as after other methods of treatment; and this may be rationally explained by the fact that the new tissue which unites the edges of the divided stricture does not partake of its fibrous or ligamentous nature. It has been said, again, that the thickened and diseased tissues are merely divided by the knife, but not removed; and hence, that the operation is inferior to dilatation or cauterization. This is an unfair way of putting the matter. We acknowledge that bougies should be employed whenever their use holds out any reasonable prospect of success; but the perineal section is not proposed as a substitution for dilatation: we have recourse to it in cases where the bougie cannot be used, or where the patient is unable to bear its introduction. I have already alluded to this latter point. In one of Mr. Fergusson's cases, every attempt to pass a bougie was followed by attacks of shivering, so violent that they might easily be mistaken for intermittent fever; and although such attacks often subside without any further disorder, they are, in other cases, the forerunners of fatal mischief. They are not confined to stricture, but are often observed in connexion with calculus, and the introduction of instruments into the urethra.

M. Civiale relates a very remarkable example in his last work on 'Calculous Diseases.' The patient had occasional attacks, which were mistaken for ague by his medical attendants, and treated with quinine. An instrument was passed into the bladder, for the purpose of ascertaining whether the rigors and fever, &c., did not depend on stone. This simple operation produced still more violent rigors, which resisted every kind of treatment; the patient died, and after death, purulent infection was found to have been the cause; the kidneys, as in my case, were filled with purulent deposits.

As to the objection drawn from the circumstance that the new passage is made through diseased tissues, I would simply remark, that if any passage at all is to be established, it must necessarily be formed in part by these tissues. We know of no method by which they can be removed completely; for no one pretends that caustic potass can be used—if indeed it can be used at all—in such a way as to remove the whole of an extensive and cartilaginous stricture, consequent on injury to the perineum.

Finally, it has been stated, as a reason for rejecting the perineal section altogether, that it is a dangerous operation, often attended with hemorrhage, and sometimes followed by death.

This is a point which merits serious consideration; for it must be confessed that external division of a stricture, even when performed with facility on subjects apparently free from internal disease, has sometimes given rise to a fatal result.

Mr. Bransby Cooper has lost a patient; Mr. Fergusson has had the misfortune to lose two or three; Mr. Gay lost one patient; Mr. Cock, of Guy's Hospital, had one fatal case, from purulent infection; and the subject of the case on which I now lecture was cut off by the same accident, supervening on the operation.

I have not had sufficient time to read all the medical journals, and extract from them all the cases of perineal section which have been published within the last three years; but I have been able to collect forty. Of these, sixteen were cases of impermeable stricture, in which the boutonnière was performed; and in twenty-four, Mr. Syme's operation, properly so-called, was practised. Of the former sixteen cases, eleven were cured and five died; of the latter twenty-four cases, twenty were cured and four died. At first sight, this gives us a mortality of ten in forty cases; but we must abstract those cases of death which cannot fairly be attributed to the operation per se.

With this correction, I find that, in the first class, two patients may be said to have died from the operation; and in the second class three likewise. The causes of death were hemorrhage, constitutional disturbance, sinking of the powers of life, erysipelas, and purulent infection. The only causes, however, which can be attributed to the operation, were hemorrhage, which occurred in one case, and constitutional disturbance, or sinking, which supervened in three. These statistics are probably very imperfect. I merely bring them forward to show that the perineal section may occasionally prove fatal. Hemorrhage may occur, especially when the bulbous portion of the urethra has been freely divided; the patient may sink from the shock of the operation; or this latter may develope a series of secondary accidents, which carry him off.

As far as our present experience goes, hemorrhage and constitutional disturbance of a severe form are the only two accidents which appear to be inherent to the operation. If the patient's health has been reduced to a very unfavourable state by local disease or its effects—if he be attacked by erysipelas, by purulent infection, or other accidents of a simliar kind, after the operation,—it is altogether unfair to attribute any fatal result which may arise to the treatment that has been adopted. Thus, to recur to my own case, and to the one related by Mr. Cock, in both of which phlebitis with purulent affection supervened and caused death, how can the accident be necessarily connected with the operative process, especially if you remember some of the examples I related to you in my last lecture, of purulent infection being induced by the simple use of a bougie? Tetanus, as you know, may likewise occur after trifling operations; it has followed the extraction of a tooth: yet who would think of rejecting the operation because of the accident? In like manner, erysipelas, hospital gangrene, &c., may set in after a trifling operation, and carry off your patient. These are facts familiar to every one; and nothing but the most determined prejudice could induce certain persons to reject an operation because it may possibly be followed by secondary effects, which no surgical foresight can prevent or avoid. Such a mode of reasoning is at once unscientific and disingenuous. If it were admitted, the progress of surgery must be arrested at once. I do not mean to affirm that you are to undertake rashly every operation which may be proposed; but, on the other hand, you are not to reject, without weighty reasons, a mode of treatment which has been followed by the most beneficial results in the hands of our most distinguished surgeons.

In cases of old and obstinate stricture, which have resisted all other methods of treatment, and where the health of the patient is about to give way, you are bound to ask yourselves, Shall we allow the disease to progress until it becomes irremediable, entailing misery on the patient, endangering his life, and probably rendering another operation (puncture of the bladder) ultimately necessary under unfavourable circumstances; or shall we attempt to relieve and cure the patient by a simple operation, which holds out every prospect of success? I would unhesitatingly answer in the affirmative. When extensive practice shall have made you acquainted with the effects of severe stricture, you will be better prepared to understand the impolicy of allowing things to go too far—of delaying until relief becomes impossible. In the case before us, I have no doubt but that the complication which proved fatal may be mainly attributed to the condition of the urethra, produced either by the original disease, or the treatment employed before the operation. The whole surface of the urethra in front of the stricture was inflamed, and contained numerous abscesses; and from the general history of purulent infection, we know that the presence of an abscess in any part of the genito-urinary system is a determining cause of purulent infection after operations performed on the bladder or urethra.—*Lancet, June* 19, 1852, *p.* 578.

[Mr. Coulson having remarked upon the concurrence of Mr. Wade in the operation of perineal section for stricture of the urethra, that gentleman, in a letter to the editor of the 'Lancet,' states his views somewhat more fully, lest he should have been misapprehended. The following are his observations, which, he says, were only partially quoted and commented upon by Mr. Coulson.]

In some strictures, from mechanical injury of the urethra, followed by more or less sloughing of the injured parts, a hard, gristly cicatrix will often be left, while the greater portion of the urine may be passed through fistulous orifices in the perineum. In such a case, dilatation, as well as caustic, will very probably fail in the best hands, and division of the obstruction, by perineal section, be the only chance of relief for the patient. Where the urethra has been divided by a wound in the perineum, a hard cicatrix may be formed at the seat of injury, and if the contraction cannot be kept sufficiently open by other means to ensure the patient from danger, division by the knife may become advisable, although that proceeding will not always be successful; for so strong a tendency have cicatrices to contract, that although great care be taken, by constant introduction of instruments, to preserve the advantage which has been gained, yet the stricture may return nearly, if not quite, as bad as ever. In a case of hard contractile stricture, not the result of mechanical injury, which has long remained *impermeable* to all milder means of treatment, and where the patient's general powers are suffering *severely,* the operation by perineal section may probably be advisable. I believe, however, that such instances will be of *rare occurrence.*

I have stated the above as cases in which perineal section may possibly be necessary; for although the potassa fusa has succeeded in many such instances, who can calculate upon invariable success with any one method of treatment? I believe, however, with the exception of cases in which a portion of the urethra is obliterated after the sloughing of a part of the canal, or when a hard, contractile cicatrix is left, from complete division or laceration of the tube, that perineal section will rarely be necessary. With regard to Mr. Syme's operation, it is at present my conviction, that where an instrument, however small, can be passed into the bladder, the persevering application of caustic potash will accomplish more enduring good for the patient,—that is, if there be time for its operation, and life be placed in no immediate peril,—than can be effected by perineal section,—and without the slightest risk of a fatal occurrence. My reasons for such an assertion are, that I have lately, by the application of potassa fusa, succeeded in several cases where no hope had been held out to the patients but perineal section, and in two of them both nitrate of silver and potassa fusa had been used, but the latter neither with that confidence nor perseverance requisite for its efficient action in such cases. Further experience has but confirmed my opinion of Mr. Syme's operation, expressed more than two years ago,—viz., that "its performance can only be justifiable in cases of immediate or imminently impending danger, and that it cannot be depended upon as a permanent cure of bad cases of urethral obstruction."—*Lancet, July* 3, 1852, *p.* 19.

93.—REMARKS ON THE LIMIT WHICH MAY BE GIVEN TO DILATATION OF THE URETHRA.

By John Hilton, Esq., F.R.S.

[The remarks of Mr. Hilton upon this subject cannot be better illustrated than by the following cases, which he has related and commented upon.]

A gentleman in my neighbourhood applied to me, a short time ago, with a stricture situated at the bulb. At first I could only pass a catgut bougie, but subsequently succeeded in introducing Nos. 5, 6, and 7. The latter number was passed through the meatus urinarius with difficulty, and gave the patient pain; it produced a good deal of irritation, and I am confident that a considerable amount of mischief would have been done by going beyond No. 7. Indeed, using that number at all was wrong. Nos. 5 and 6 were this patient's size, and by adhering to them, he recovered perfectly, and is now quite well. He passes now and then No. 5 for himself before going to bed, and leaves it in the urethra about a quarter of an hour. It would have been quite absurd to have gone on increasing the size of the bougies and the number of my fees; such a course would have been a great injustice to the patient, and very discreditable to myself and my profession.

This case reminds me of an analogous one, in which the patient came from a distant part of the world. He brought to London letters of introduction to two surgeons of whom I was one; and he first applied to the other. He was, however, not benefited, and as he wanted to return to Ceylon, the surgeon finding the meatus narrow (it would admit Nos. 5 and 6), slit it open, so that Nos. 9 and 10 could be easily introduced. These numbers were persevered in, in spite of the stretching pain, and uneasiness felt by the patient; but as no real beneficial progress had been accomplished by the first surgeon, he made use of his second note, and came to me, tormented by urethral pain and inconvenience, with great depression of spirits.

I found the corpus spongiosum, containing the urethra, as hard as a stick, tender on pressure; a pretty constant discharge of mucus from the urethra, frequent desire to pass urine, always accompanied by pain in the penis, which was rigid and hanging down, not erect, the corpora cavernosa not being involved in the mischief or excitation; the urine emerged very sluggishly, great expulsory efforts being required to insure even its slowly draining from the penis; the canal seemed almost obliterated, notwithstanding the calibre of the instruments which had been forced along its length with assiduity and energetic perseverance. Reflecting on these conditions, and the description which the patient gave me of his state before the employment of large instruments, I concluded that he had had sounds of too large a size passed. The urethral canal being thus considerably hardened, I interdicted the use of instruments, and prescribed mercurial and iodine ointment to be rubbed along the perineum and the whole course of the urethra, to aid or induce interstitial absorption. In about ten days, the induration had materially diminished; and after consulting with Mr. Bransby Cooper, who fully coincided with me in my view of the case, it was agreed that the patient should be placed constitutionally under the influence of mercury, for the purpose of diminishing the size of the corpus spongiosum, and I also began dilating the urethra *de novo*, keeping at last within No. 8.

In the course of a few weeks I could make No. 8 go into the urethra beyond the meatus (which you will recollect had been slit open to a larger size), but it required more force than was right to be employed, so I advised him never to attempt himself, nor to let any one else be trying to pass instruments beyond No. 6. By pursuing the constitutional treatment which has been mentioned, by blistering the urethral portion of the penis, and carefully using this number or size, the most satisfactory results were obtained, and the gentleman left for Ceylon, delighted at the comfort and improved condition he was experiencing. I advised him to pass No. 6 (for that was his size, and not No. 10 or 13) occasionally, or once a week, and to blister the urethra if he felt much uneasiness or inconvenience in that canal when on his journey.

You see, then, that I apprehend the surgeon who first treated the patient had done too much; he had gone too far, and had, in his anxiety to enlarge the urethra, excited mischief. I repeat it, the best single criterion of the natural size and calibre of the whole canal is the meatus urinarius, provided that be obviously healthy. Take, then, a good measure of that aperture, and you will have a tolerably reliable guide as to what extent you should push the dilatation in treating strictures of the urethra.

The next question now is this—When may a stricture of the urethra be considered cured? This question should, however, be restricted to patients who are young, or in the middle period of life, and who have no other disease of their urinary organs.

You observe I intentionally exclude the aged or prematurely old in answering this very pertinent but practical question: the reason is, that with such patients there are usually structural changes going on in the urethral walls, prostate gland, and bladder, which may be said to be natural to that period or condition of life, and which produce and cause the persistence of some of the symptoms of a strictured urethra, in spite of any and every effort made by the surgeon to stay or avert them. Confining ourselves, therefore, to the young and middle-aged, we may say that the patient is cured—1. When (assuming there be no local disease, such, for example, as the cicatrix of a chancre, causing contraction at the meatus of the urethra) a catheter or sound which fills the end of the urethra can pass through its whole length without any except muscular interruption.

2. When the water flows freely and *with force* during micturition, without pain or smarting in the urethra. Here you should notice that the *force* with which the urine is expelled is a good criterion of the powers of the bladder and healthy urethra. The actual *size* of the stream is not so trustworthy a sign as the vigour just mentioned, for the urethra (and consequently the stream) may be naturally large. But the force with which the expulsion is performed shows whether there is an impediment in the way or not. Another point of importance is, that the urine should be voided without pain, for where micturition causes uneasiness there is certainly something wrong, about the bladder or canal, and the patient cannot be considered as cured.

3. When the bladder empties itself completely, and the act of micturition is not followed by any dribbling; for if any such dribbling take place, it will point to a kind of atony in the muscles of the urethra, lately found and described by a very intelligent surgeon, Mr. Hancock, of Charing-cross Hospital.

4. The urine should not emit an ammoniacal odour.

5. There should be no mucus or pus in it.

6. There should not be any habitual discharge from the urethra.

You see, by the six heads which I have just enumerated, that there are many physical circumstances to be taken into consideration for pronouncing a patient cured, besides the free passage of the instrument along the urethra.—*Lancet, Sept.* 11, 1852, *p.* 234.

94.—*On Stricture of the Urethra, with a New Method of Treating the Disease.* By W. J. MOORE, Esq., late Resident Surgeon at the Queen's Hospital, Birmingham.—Having, during the last three years, paid considerable attention to diseases of the genito-urinary organs, particularly stricture of the urethra, I am induced to lay before the profession a means of treatment by dilatation, which, so far as I am aware, has never before been practised or proposed. Although so much has of late been said on the subject, it is generally admitted that all the varied plans now advocated are open to serious objections. The treatment by dilatation as ordinarily practised often fails; frequently a catheter of even moderate size may be passed one day, and on the next, owing to spasm, congestion, or subacute inflammatory action, no instrument can be used. Retaining the catheter in the passage is also unsafe; inflammation of the bladder, peritonitis, abscess, &c., not unfrequently arising. The caustic treatment is now almost universally deprecated. Professor Syme's plan is only applicable to certain obstinate cases, where the passage of instruments cannot be borne, or when such treatment has failed. The metallic stricture dilator, lately brought forward, is open to the objection of expanding more in the anterior part of the urethra than the posterior, in which latter portion of the passage it is evident the expansive force is mostly required. Mr. Wakley's instruments are certainly the best yet in general use, and have proved, in my hands, productive of much good; but the interior of the urethra is liable to suffer by the passage of the hollow tubes over the straight staff.

From a consideration of these and other circumstances, I came to the conclusion, that could a thin, expansible substance, be introduced into the urethra, to serve as a sort of false lining membrane, dilatation might might be practised to any extent by expanding (with a larger instrument, sound, or catheter) the expansible material already introduced. Under this impression, I applied to several manufacturers of gutta-percha and India-rubber articles, and finally obtained some tubes from Messrs. Mackintosh, of Liverpool, which partly answered the purposes required. They were, however, too thick and clumsy in every way, so that it was necessary to have a new set prepared on a smaller scale. The material used in their manufacture is, I believe, a mixture of gutta percha and caoutchouc, with here and there a thread introduced for security and strength. The tubes themselves are rather longer than an ordinary catheter, and the smallest very thin, and of sufficient calibre inside to receive a small wire stilet. The stilet, thus enclosed in the expansible case, is carried through the stricture into the bladder; the wire is then withdrawn, and a larger wire, catheter, or sound, well oiled, passed in its stead within the expansible case already present for its reception. Thus dilatation may be carried to any extent without risk of producing laceration of the urethra, false passage, hemorrhage, or other accident. A command of the passage may also be retained by allowing the flexible tube to remain, which may be done without risk of suppuration or irritation, for days together; the urine being drawn off once or twice daily by means of a catheter, the holes at the end of the instrument of course corresponding with other apertures at the extremity of the dilatable tube.—*Lancet, Oct.* 16, 1852, *p.* 351.

95.—CASE OF TRAUMATIC STRICTURE OF THE URETHRA.

Under the care of William Coulson, Esq., Surgeon to St. Mary's Hospital.

[In this case there was severe injury to the urethra. In such cases it is customary to keep the urethra as pervious as possible, and remove the urine constantly by means of catheters; but]

Many a surgeon must certainly have thought, before this, that in cases where the canal of the urethra is completely spoilt, where re-establishing its continuity is a matter of impossibility, it might be better to contrive some artificial outlet for the renal secretion, than to make repeated attempts at rectifying the state of the natural canal, when these endeavours are not likely to be crowned with success. In a word, is it not better to establish a permanent or temporary opening over the pubis, or through the rectum, than run the risk of all the dangers which accompany frequent attacks of retention? A temporary artificial outlet may, by affording the urethra complete rest, favour a return to the original state of parts; and if the urethra is so much injured as not to be amenable to treatment by dilatation, even after several weeks' rest and freedom from the passage of instruments and urine, the best plan would seem to be to render the temporary outlet permanent.

That the urine may be discharged for a long period from an opening over the pubis, is proved by a case of Mr. Lloyd's, at St. Bartholomew's Hospital. The patient has now used a canula in the pubic portion of the bladder for the last *twenty years;* and that none of the functions are thereby prevented, is proved by the fact, that the last time we saw him at St. Bartholomew's, he was under treatment for syphilitic iritis.

That the formation of an artificial urethra is an operation which may be fraught with some danger, we are free to admit; but we merely suggest that in very bad cases it might perhaps be tried. The one which we are going to relate does not exactly come under this head, for the patient died of chorea; but the case will accurately illustrate the host of difficulties which are in these instances besetting the surgeon, and show that in the most skilful hands they are hardly to be overcome by the methods at present in use. We shall soon have an opportunity of recurring to the operation of puncturing the bladder, either above the pubis or through the rectum, as the hospital surgeons of this metropolis are, with regard to this subject, divided into two camps, where completely different opinions are held, as was shown by the late discussion in the Medico-Chirurgical Society. We hasten, in the meanwhile, to give, from the notes of Mr. Bullock, house-surgeon to the hospital, a sketch of Mr. Coulson's case, which strikingly exemplifies all the phenomena connected with traumatic stricture.

J. D., aged sixteen years, strumous-looking, very nervous and excitable, and accustomed to farming work, was admitted into Albert ward, under the care of Mr. Coulson, Dec. 12, 1851. It appears that, eighteen months before his reception into this hospital, the wheel of a heavy cart passed over the patient's pelvis, taking a course from between the thighs over to the left ilium. He states that the perineum and the scrotum swelled immediately to a considerable extent, and as he had great difficulty in passing his urine, a catheter was introduced, and the same operation repeated several times a day for a week, after which period he could empty his bladder without assistance. One month after this period, difficulty of micturition occurred again, and the patient was then admitted into University College Hospital, where instruments were regularly passed for about six weeks.

Being now much improved, the boy left the hospital, and continued well for about two months, when the urine began to dribble from him. He therefore applied again at University College Hospital, when some trouble was experienced in passing an instrument. The patient was now successively in- and out-patient at University College Hospital, getting alternately better and worse, until an abscess formed in the perineum. The pus was then freed, and the urine continued for several weeks to pass through the wound. The latter finally healed up, and the patient left the hospital in tolerable condition. His troubles were, however, not yet over; for, a little time afterwards, Dec. 12, 1851, as above stated, he presented himself at St. Mary's Hospital, with complete retention, no urine having been passed for fifteen hours.

He complained of severe pain in the abdomen, loins, penis, and anal region; his countenance was pale; pulse 120; respirations 38. In the median line of the perineum, a linear cicatrix was observed, resulting in all probability, from the incision which is mentioned above. The boy, as we stated "in limine," being very nervous and excitable, begged that chloroform might be used before the catheters were tried; he was therefore narcotized, and No. 7 passed down to the perineum. Further than this the instrument could not be introduced, and when No. 2 was used it took an abnormal course, running seemingly to the left of the urethra in the vicinity of the bladder, and a little milky fluid, followed by urine, was discharged. As the impediment, however, could not be overcome, chloroform was soon afterwards administered again, and the urethra opened from the perineum. This operation was far from being easy, as no staff or guide could be passed through the proper canal, all the instruments deviating from the right course, and passing down by the side of the rectum. The amalgamation of the structures resulting from former operations, was also a source of embarrassment; but at last Mr. Coulson succeeded in passing a female catheter, into a part containing urine. About three ounces were now evacuated through the instrument, which latter did not, however, seem to have gone into the bladder, as that viscus remained distended. But after the boy had been removed to bed, the urine dribbled freely away from him.

Opiates were regularly administered, and for the next nine days the urine passed through the wound in tolerable quantity; the bladder became gradually less distended, and the boy gained a little strength.

Mr. Coulson now enlarged the wound, and attempted to reach the bladder with a No. 2 gum-elastic catheter; the instrument passed down for a pretty long distance, but no urine flowed through it. In bed, however, urine came through the catheter and the wound, and soon afterwards principally through the former. About eighteen days after this the boy complained of much pain; the catheter was therefore removed, and found thickly coated with phosphates.

The patient now went on for about seven weeks with very trifling alternations in his state. and was then allowed to leave the hospital for a little while, to recruit his health, the urine passing pretty freely through the wound in the perineum. He was re-admitted one month afterwards, in about the same state as before; and Mr. Coulson, whilst the patient was insensible with chloroform, introduced a director into the meatus, and passed it along the urethra almost to the opening in the perineum, enlarged the wound so as to expose the point of the director, and introduced another staff into the bladder through the perineal aperture. A No. 3 silver catheter was now glided down through the meatus across the wound in the perineum, through the canal leading from the latter into the bladder, and a considerable stream of urine flowed through the instrument. This silver catheter was then retained and a full opiate given.

The urine for several days afterwards came freely through the catheter, when the patient, about a week after the last operation, became very nervous, removed the catheter partly during the night, and began to imitate a boy affected with chorea lying a few beds from him. From this time to the patient's death, a period of about a month, the choreic affection went on increasing in intensity, his skin being fretted and excoriated by the continuity and violence of the movements. Catheters could now and then be passed, but the stream remained very imperfect.

Post-mortem Examination sixty-eight hours after death.—There is extreme emaciation; the face, neck, and upper part of the chest present a spotted appearance, from the discharge being dried up on the parts from which the patient had torn the cuticle during life. The skin over the occipital bone is abraded in several parts; the lips have a fissured appearance; there are small sores on the outer side of the knee, hip, elbow, and metacarpo-phalangeal articulations of the right side; the same is seen on the left, where the sore over the elbow is deeper, extending down to the muscles. The skin over both hips and sacrum is red and abraded, though there is no appearance of sloughing; the wounds of scarification are not healed. After sawing through the calvarium, there was some difficulty in removing the skull-cap, owing to firm adhesions between it and the dura mater at the occipital and posterior part of the parietal bones. The superficial vessels were congested; the brain itself firm and healthy, as were also the ventricles. Some effusion was observed within the theca of the spinal cord; the latter itself was, however, firm. No pleural adhesions on either side. Lungs healthy. The valves of the heart were sound, except the mitral, at the base of which, along its auricular margin, there were numerous, small, irregular, fibrinous vegetations. The cavities of the organ were filled with firm fibrinous clots, but the structure was in a normal state. Intestines small and empty. Liver firm and pale. The kidneys, being examined under a microscope, gave great evidence of chronic inflammation. A catheter was easily passed into the bladder per urethram, being seen in its course to tranverse the perineal wound, which is half an inch in length. The catheter had a great tendency to run to the left of the median line; a probe could also be passed onward from the wound into the bladder; the former, on a close examination, presented a healthy appearance. The bladder was contracted; its coats being nearly an inch in thickness. Between the lower part of the sacrum and rectum, an abscess was observed about the size of a bantam's egg, which communicated with the urethra by means of a false passage, commencing in that canal just as it passes under the arch of the pubis. This false passage ran to the left by the side of the rectum into the abscess, a part of the passage appearing to be formed by the urethra itself. From the abscess a catheter could be introduced into the bladder. Above this and in the median line was another passage, which led into a cavity behind the pubis; this was of considerable extent, and communicated with the above-described passage as well as with the bladder. The cavity was only separated from the peritoneum above by the anterior ligaments of the bladder, and lay between the anterior wall of the bladder and the posterior surface of the pubes. From this there was a third passage, running through the descending ramus of the right pubis, which had apparently been fractured near the junction with the ascending ramus of the ischium. It appeared that union had taken place, with the exception of this passage, which led to a small abscess near the outer margin of the obturator foramen into the adductor brevis muscle. Both the ascending ramus of ischium and the descending of pubis were much thickened, and larger than those of the opposite side, and at the posterior surface there was a projection of new bone into the above-mentioned cavity.—*Lancet, May* 29, 1852, *p.* 519.

96.—MR. BARNARD HOLT'S STRICTURE DILATOR.

[The necessity of thoroughly understanding the nature and treatment of stricture of the urethra, is too obvious to need serious comment, and it is of the utmost importance that any improvements made in the instruments employed for its relief, should have every opportunity of being presented to the profession at large. It is with this view that the following remarks are introduced, respecting the value of Mr. Holt's stricture dilator.]

This extremely ingenious instrument is, Mr. Holt says, a modification of that contrived by Perrève. It consists of a tube like a catheter, split up to the extremity, where the two halves are welded together. Running through its whole length is a directing-rod; over this directing-rod can be passed a series of tubes of increasing calibre; thus effecting the slightest to the most extensive degree of dilatation. When the small closed tube is passed through the stricture, the sounds can be passed in succession, till the highest point is attained to which the surgeon wishes to go; and, as they are passed over the guiding-rod, and down the interior of the first instrument passed, it follows that all this dilatation may be attained without disturbance to the stricture. Here, then, may be said to be in some measure combined all the advantages which other instruments have ever offered. Steady, uniform dilatation, while the urethra is not irritated by renewed friction; the absence of any necessity for attempting to find again the difficult route; a continuance of the curative application, and thorough safety. The "stricture dilator" may therefore be fairly looked upon as a valuable addition to the means of treatment we possess. The following case will tend to show how satisfactorily it acts:—

J. G., a carpenter, aged 41, living in Lambeth, was admitted Jan. 1851, into Westminster Hospital. He gave the following account of his case. He had laboured under stricture twelve years. He knew of no cause for it, as the last gonorrhœa he ever remembers having suffered from had occurred eight years previously; but those who know how insidiously stricture springs up, and how obscure its origin is, will know how to appreciate these facts. However, having long suffered from it, he went at last to a surgeon, who attempted to introduce an instrument, but could not pass it more than two inches down. Considering it a very bad case, he recommended the patient to go into the hospital.

When admitted, the stream of urine was very narrow, not being thicker than a wire or knitting-needle, and no instrument could be passed into the bladder. An abscess formed in the perineum, which was opened by Mr. Phillips. The patient was then transferred to the care of Mr. B. Holt, who commenced treating him with his stricture-dilator, Feb. 5, 1852.

Nothing larger than No. 1 could be passed at first. This, however, was got through every other day, but, owing to the appearance of some irritability and hemorrhage, nearly a week's intermission in the use of instruments took place. The fourth time this dilatation was tried, the canal was found so much widened, the dilatation could be carried on so far that a No. 6 was admitted. After this period, dilatation was steadily continued till towards the close of the month, when this report was drawn up. At this time, No. 9 could be passed with ease.

The man seemed very much pleased with the results of this treatment. The pain had been considerable at times, at others slighter, the abscess soon healed up, and the patient's health improved; especially as he could retain his urine in the night, instead of being obliged to rise a dozen times to void it. These are satisfactory results in so short a time, and in a case where nearly the whole line of the canal was strictured.—*Med. Times and Gazette, July* 17, 1852, *p.* 68.

97.—CASE OF RETENTION OF URINE.

By JOHN HILTON, Esq., F.R.S., Surgeon to Guy's Hospital.

[In this case, stricture of the urethra had been the root of the evil. This had been followed by abscess, fistula in perineo, and retention of urine; for the relief of the last of which the bladder had been punctured through the rectum. Mr. Hilton proceeds:]

"The following day, Nov. 19th, the patient was brought to the hospital; and as complete retention had existed for thirty hours, Mr. Poland and Mr. Puckle, the dresser, endeavoured sedulously to introduce a catheter; they failed, however, in their object. The instrument instead of entering the bladder, readily glided into a false passage, nearly three inches in length, along the anterior walls of the rectum, and immediately behind the prostate gland. Soon afterwards, nearly two tablespoonsful of pus and urine escaped through the meatus."

You at once surmise that the pus here evacuated proceeded from one of the abscesses, which, during the manipulations just described, had been punctured.

"The patient was now ordered a warm bath, and two grains of opium. Two hours afterwards he was seen by Mr. Hilton, who likewise tried to pass an instrument; but, not having succeeded, prescribed two more grains of opium."

What was my object in giving opium so freely? To endeavour to overcome the spasmodic state of the parts surrounding the urethra, and bring about relief to the urgent symptoms without having recourse to an operation. It is, indeed, a great triumph in surgery when we succeed in affording relief, and eventually curing an affection of a serious kind, without the use of the knife. There is always some *éclat* connected with surgical operations, but I would strongly advise you ever to prefer doing good to your patient, to merely trying to attract upon yourself the attention of your professional brethren, and make a public display of your dexterity. By giving the opium largely, I was endeavouring to overcome muscular spasm, which latter is so often the sole cause of the retention. Patients thus treated by opium, generally fall into a profound sleep, the spasm gives way, and they succeed in emptying their bladder by *vias naturales*, in small quantities at a time.

"At half-past seven, p. m., Mr. Hilton saw the patient again, and found him evidently affected by the opium; he had been sleeping, was drowsy, the pupils contracted, and he was now in scarcely any pain. But the bladder, dull on percussion, might be felt extending upwards nearly to the umbilicus; it felt tense and distended with urine."

You hear it stated in the report that the bladder was *dull on percussion;* pray give your attention to this symptom, and bear in mind, on the other hand, that accounts given by patients of no water having been passed must not be fully relied upon as final in determining the case to be one of retention, for the patient's kidneys might have secreted no urine, the case being then one of suppression rather than retention. Dulness of percussion, and the definite form of the swelling, will quickly show you that the bladder is filled with fluid. I must, however, not omit to say for your instruction, that a gaseous tumour has been, and perhaps will be again, mistaken for a full bladder; the case being one of suppression of urine, and the intestines distended with gas occupying the site of the bladder. You should inquire the anatomical reason why the latter viscus does not distend sidewards, nor distressingly backwards, when filled with urine. The course and direction of the distended bladder are determined forwards by its adhesions to the anterior parietes of the abdomen, it being there attached by cellular tissue, and the remains of the urachus fixes it to the umbilicus. The lateral distention of the bladder is happily limited; if it were not so, the increased size of the viscus in that direction would cause compression of the iliac veins, and then œdema of the lower extremities; in fact, the round ligaments or remains of the umbilical arteries prevent the distention in the direction just mentioned. When the position and relation of the ureters and bladder are recollected, it is really surprising that, in cases like the present, the latter does not burst, or become forcibly rent from the pelvis; for these organs resemble much an hydraulic press—the bladder is the receptacle, and the ureters the tubes; and as these pass obliquely into the bladder, there is no necessity for the valves attached to the real hydraulic press. The neck of the bladder will become much elongated by distention. You may easily convince yourself of this by passing your finger into the rectum, and feeling at intervals of time the condition of the part while the bladder is filling from the ureters. The ligamentous tissue existing in the vicinity of the pubis, and around the neck of the bladder, is intended to resist over-distention or forced separation, notwithstanding the extreme stretching force to which it must be sometimes subjected: this is very probably the use of that tissue, else it would hardly be so strong and so abundant.

"Mr. Hilton having tried again, but without success, to pass a catheter, determined upon operating by puncturing the bladder through the rectum, by means of a trocar and canula. The patient was brought to the edge of the bed, and placed as for the operation of lithotomy, but with his head and chest much lower than the pelvis. Very nearly three pints of turbid, ammoniacal urine were drawn off, and the canula, (consisting of three tubes, one within the other) was secured in the bladder by means of tapes fastened to a band round the waist. There was no blood lost; the patient was conveyed to his bed, which was previously carefully arranged, and he was allowed wine and porter."

I must here point out to you that the position of the patient for this operation is not exactly that usually assumed for lithotomy; the head and chest ought, in fact, to be lower than the pelvis, and the rectum and bladder should be brought on a line. I will now attempt to describe the operation.

You pass the index-finger of the left hand into the rectum until you feel the prostate gland, and push your finger, if possible, behind that part, which is generally very high up in distended bladders. You then seek for fluctuation, and endeavour to ascertain this symptom, which, however, is not always easy to do. Desire now your assistant to make pressure upon the bladder over the pubis, and to press the viscus down towards the rectum, in which the finger is placed. Having recognized the posterior part of the prostate gland, and maintaining with all possible care the median line, glide the instrument along the palmar surface of the left index-finger until it is in contact with the distended bladder resting on the rectum; take out the director, introduce the trocar, and push it upwards and forwards one or two inches into the bladder, or until you lose the resistance which the coats of the gut and bladder offer to the trocar.

I have never before used the canula which I am showing you; but I think it certainly very useful, for it admits a sort of sound, the smooth and convex end of which protects the rectum from injury during its passage along the gut. Upon the trocar being introduced into the bladder, the urine will flow easily; great care should, however, be taken that the prostate gland be not transfixed, for such a mistake would very likely be fatal to the patient.

I show you here a canula which has been designed by Mr. Cock; it is composed of a hollow tube, provided with three cranks on one end, which are made to expand by the introduction of a canula within it, and which latter is prevented by the cranks from slipping out of the bladder. I consider this as a very good instrument. You should, when the patient is in bed, place one pillow under his thighs, one under the pelvis, and the utensil between them, so that the urine may drip guttatim into it without wetting the bed. The details of the case proceed as follows:—

"The day after the operation, Nov. 20, the patient felt much better and quite free from pain; has passed a considerable quantity of urine through the tube.—21st. Has slept well, tongue clean, skin warm and moist; the bowels not having acted since the operation, the patient was ordered one ounce of castor oil.—22nd. Passed very dark motions. Ordered to repeat the castor oil, with twenty minims of tincture of opium; six ounces of wine and one pint of porter daily.—23rd. The oil has acted very powerfully; the patient has a troublesome cough, and was ordered a sedative expectorant mixture.—24th. To-day the two inner tubes were withdrawn for the purpose of cleaning them, and the bladder syringed out with warm water at 98°. As the bowels continued very loose, the porter was omitted, and ammonia, in a tonic and aromatic mixture, was prescribed.—25th, being the sixth day from the operation. For the first time nearly an ounce of urine was evacuated through the penis, and caused very great smarting pain along the whole course of the urethra, which pain was more particularly referred to the end of the penis.—27th. Passes as much urine through the penis as through the tube; he can retain a considerable quantity of urine in his bladder, nearly half a pint being evacuated at will by the meatus."

I will just remark here that this was evidence of great improvement, as the patient was able on the seventh day to pass as much urine through the urethra as through the tube in the rectum. This circumstance points to a favourable change in the walls of the urethra.

"29th. Very profuse diarrhœa has come on during the night, without any assignable cause. Mr. Hilton prescribed chalk mixture, with aromatic confection and syrup of poppies; the two inner tubes were to be removed and cleaned, and the bladder to be syringed with warm water.—Dec. 3. The urine passed through the urethra, besides a lagre quantity of pus, to day also contains blood; there is great constitutional as well as local irritation. The presence of the canula in the bladder being considered in some measure the cause of these symptoms, the instrument was removed. Ordered half a grain of morphia at night."

What was the cause of this bleeding from the man's urethra? Probably from some sloughing in the perineum; the blood is very likely to have come from that region, and not from any part about the canula.

"Dec. 6th. Better: the urine is more healthy, and does not contain any blood; cough troublesome. To take a conium mixture three times a day. As the diarrhœa continued, a starch-and-opium enema was ordered.—9th. The patient passes almost the whole of his urine through the proper channel; a very little of it is occasionally evacuated through the rectum; he sleeps well, and is entirely free from pain. The nodular masses in the perineum have disappeared.—12th. The patient again experiences difficulty in micturition, accompanied by great scalding and pain; the urine contains some dark venous blood.—14th. The bladder is very irritable, and the man thinks that a little water passes through the rectum; the perineum is hot and painful; the pulse small and rapid; the tongue brown and dry; there is frequent vomiting and great thirst. Ordered soda water.—17th. Nearly all the urine passes through the two large openings in the perineum.—19th. The patient lies in a half conscious state; his sleep is disturbed with constant moaning; respiration impeded; pulse intermitting and very weak; tongue dry thickly coated with a brown fur; teeth covered with sordes; and fæces passed involuntarily.—20th. He is fast sinking; pulse imperceptible at the wrist.—21st. The patient was supported by beef-tea, eggs, brandy, and wine, but he expired at two a.m."

Ever since this man had had untoward symptoms, the mischief really lay in the perineum. He had for some time been in a very unhealthy condition; he was aged, and had been living upon poor-house fare. Though some suspicion of peritonitis might have existed, I found on examination that no such inflammation had taken place. The latter is the bugbear of surgeons in cases of this kind, but it should be recollected, that when the bladder is distended there is but little, if any, probability of wounding the peritoneum, by puncturing that viscus through the rectum.

Mr. Cock has now operated upon between twenty and thirty cases of this kind, and is confident that, with care, there is not much danger of injuring the peritoneum; the more so as it is lifted away from the vesiculæ seminales when the bladder is distended, though these parts are close to each other in the undistended state. I do not mean to maintain that there is no danger whatever of the peritoneum or vesiculæ seminales being wounded, but I repeat that, with care, this objection is no obstacle to the operation.

Post-mortem examination.—The peritoneum did not present the slightest evidence of any inflammation. The abdominal viscera were all in their normal position, but pale, flabby, and badly nourished. The urinary bladder contained a small quantity of turbid, brownish, and highly offensive urine; its muscular parietes were thickened to nearly half an inch; the mucous membrane was inflamed, having upon it patches of recently effused lymph. Prostate gland but little enlarged, and the strictured portion of the urethra, which was about one inch in length, and more free than during life, occupied the bulbous division of the canal, the walls of the urethra being thickened, and the mucous surface raised, uneven, and corrugated. Two false passages were found communicating with the urethra—one in front of the urethral obstruction, the other near the prostate gland. Both of these false passages were traceable into the large perineal sinuses, through the medium of a sloughing cavity occupying the perineum, and extending for a short distance between his bladder and rectum. The opening from the latter into the bladder made by the puncture, was situated not more than two inches within the verge of the anus, although at the time of the operation, from the distention and elevation of the bladder, it was nearly, if not quite, as much as four inches above it. The internal opening was about half an inch behind the prostate gland in the median line, valvular, and admitting a crow's quill. As much space as one inch and a half intervened between the puncture and the recto-vesical fold of peritoneum. The kidneys were mottled in appearance, unhealthy in structure, and of small size; they were contracted, and undergoing the ordinary structural changes associated with albuminous urine.

It will now be useful to inquire what was the cause of death in this case. I firmly believe that this cause was not in any way connected with the operation; for there was not *locally* sufficient mischief to bring on a fatal issue. It is rather in the very dilapidated state of the man's constitution, in the premature decay which was so plain in him, that the cause of death may be sought. The diseased state of the kidneys (organs whose functions are of a depurating kind) has always a marked influence on the result of this operation, and it unfortunately is one of the most frequent and most fatal associations of long-continued stricture of the urethra. This is exactly the state of things in many of the patients who require the operation of puncturing the bladder through the rectum, or some other operation for their relief.

Practical men, who see many of these cases, must certainly be astonished when they hear, or see it stated, that all cases of this kind of old stricture, with perineal sinuses, do well, whatever may be the particular or special treatment. For many days this patient appeared to be doing well, as regarded the urinary affection; but loss of strength and emaciation continued; no constitutional reaction, no general rallying, took place, and the system finally gave way. The appearance of blood in the urine was evidence of ulceration and sloughing, solely depending on *loss of power.* It should, however, be noted that urine might have passed from the opening in the bladder to the false passage in front of the rectum, and thence into the perineum, in this patient.

As the interest of this case mainly rests upon the operation of puncturing the bladder through the rectum, let us now suppose ourselves by the bed-side of this patient when this operation was contemplated. Here was a man suffering from retention of urine for the last thirty hours, with fistulæ and nodular masses in his perineum. The best-directed efforts at passing a catheter were fruitless, and nothing but main force to make a canal seemed likely to avail. The patient was given warm baths and opium without success; and as he could not be in a worse condition, he must be relieved by some means or other. The requirements, then, were to afford instant relief, and the question arose what method should be adopted. There are several methods, which I shall now pass in brief review.

First. A passage may be *forced* through the urethra into the bladder. This involves the risk of wounding the peritoneum, and of exciting hemorrhage, which may be fatal to a debilitated patient. No such proceeding could have been justifiable in this case, for the man was weak, ill fed, and in a state of great irritation. This violence is likewise very painful, and the instrument may, by pressure upon the original canal, preclude the latter from ever recovering itself. The passage made by main force is also very liable to take on ulceration; extravasation of urine may then take place, and the most alarming symptoms ensue. There is likewise a risk of not finding the route again when the catheter is removed; but this untoward circumstance may be avoided by using Mr. Thomas Wakley's instruments, which allow flexible catheters to be withdrawn over a conductor or guiding rod, and be passed again along the same guide.

You may, in the second place, puncture above the pubis. This operation is never performed in this hospital; I am not aware, however, why such is the case, and my experience on this head is not extensive. But from the accounts I hear, I consider that evacuating the bladder by a puncture above the pubis may be very safe and effectual, and it is far from being difficult.

In the third place, the operation may be performed through the perineum; this, however, is accomplished with much difficulty, and would prove an intricate operation for the generality of surgeons. The urethra is in the perineal region so distorted by fistulæ and thickening, the canal is of so irregular a shape, that reaching the bladder by the perineal route is an extremely tedious task. The operation is also extremely painful, and is of necessity mostly of a protracted kind; the patient, who is, in general, already much exhausted, can hardly bear this severe ordeal; hemorrhage is sometimes very considerable; no one can say to what extent the parts may bleed; and it has happened that after a great deal of trouble to the surgeon, anxiety, pain, and risk to the patient, the bladder was not reached at all, and the operation in that respect remained incomplete. This course could by no means have been adopted in the case before us, as the patient was already in a very exhausted state.

Now, in the fourth place, you may puncture the bladder through the rectum. There is really no danger in this operation, in spite of what may have been dogmatically laid down against it; the experience of this hospital is all in its favour, and my colleagues and myself may certainly be excused for adhering to a practice which we have found effectual in relieving the patient, and perfectly harmless. Generally there is little or no hemorrhage, the operation may be performed in a very short time, and is not in the least debilitating to the patient. The bladder is in this manner punctured at the lower fundus, and Mr. Cock's instrument will, after the operation, remain fixed in the pool of urine which is forming in the lower portion of the bladder, the fluid thus constantly draining off by the rectum. In puncturing above the pubis, on the contrary, you are obliged to tilt the patient to favour the evacuation of urine; this is certainly very inconvenient. Recollect that by not allowing any urine to pass through the urethra, this canal remains perfectly at rest, and there is a very good chance of seeing the stricture yield to treatment.

To recapitulate, then, I will just state that the reasons which lead me to prefer puncturing by the rectum rather than in any other way, are positive and negative. First, the negative reason is, that this operation is not open to the objection which may be brought against the other operations. Secondly, the positive reasons which can be adduced are:—

The operation is free from danger if carefully performed; there is very little risk of hemorrhage; the operation is by no means of a protracted kind; it does not tax the patient's strength; is not exhausting, and entails no drain upon the system. As the lower part of the bladder is punctured, the accumulation of mucus, urine, pus, or other secretions, is not allowed, the viscus being completely emptied; you prevent the urine finding its way into the urethra, and give an opportunity to the false passages of healing, and the natural urethra of recovering itself. The seat of the stricture is kept in a state of rest; no local excitation is used, and all irritation, muscular contraction, or spasm is forestalled. There is, on the other hand, no chance of the bladder contracting away from the instrument; it *contracts towards it.*

The principle of the operation as regards the stricture is the same as in opening the trachea to relieve the swellings and obstruction in the larynx. You keep the larynx in a state of rest, the breathing goes on through the trachea below the larynx, and in a few days all swelling has subsided. You may also notice that the same principle of relief holds good in this operation as in obstruction to the large intestine. When an artificial opening is made above the seat of the stricture, so as to allow the escape of fæces, you remove a source of irritation from the stricture, the swelling and infiltration about it diminish, and, in a few days, small quantities of feculent matter may pass through the narrowed portion of the intestinal canal. So in cases of stricture of the œsophagus, if we can keep the walls of the tube in a state of repose, it may sometimes recover in part its natural condition. This may be accomplished by feeding the patient by the rectum.

I recollect, in illustration of this point, a case of stricture of the œsophagus in the posterior mediastinum, which I attended at Islington with Dr. Golding Bird. There was perfect inability to get any instrument or food into the stomach, and, of course, excessive emaciation. By adopting the use of nutritive enemata, regularly and carefully administered, and by avoiding the employment of the œsophagus in swallowing, so keeping it in a state of repose, at the expiration of a fortnight, the patient had plumped up amazingly, and regained slightly the power of transmitting fluid food through the œsophagus. This improvement continued slowly to increase, but too slowly for the patient, and, not liking the anal method of taking good food, consulted another surgeon, who, relying on his manual dexterity with the probang to force or overcome the stricture, made a false passage by its side into the pleura, and desiring that the patient should give, as he hoped, the proof of his successful attempt, requested him to swallow some porter, which found its way into the pleura, and killed the patient, as proved by a post-mortem examination.

For the purpose of showing you how complete a nutrition may be obtained by proper injections per anum, I may mention the case of a gentleman I saw at St. Alban's, who had cut his throat so deeply that it was thought impossible to feed him either by the mouth or wound, and recourse was had to enemata. He was thus supplied with food, wine, and porter for thirty-four days; during that time his thirst and hunger were speedily relieved and satisfied by the injections—a curious and highly-interesting physiological fact. He recovered from the effects of this unsuccessful attempt at suicide—came to London, and destroyed himself shortly afterwards by blowing out his brains.—*Lancet, Oct.* 16, 1852, *p.* 343.

98.—ON LITHOTOMY AND LITHOTRITY.

By William Coulson, Esq., Surgeon to St. Mary's Hospital.

[Mr. Coulson is desirous of considering the indications, comparative advantages, and relative applicability of lithotomy and lithotrity. The two following cases are good illustrations for this purpose.]

Two patients were recently under my care for stone in the bladder. The one was young, the other old. In one I performed the operation of lithotomy; it lasted about a minute, was unattended by the slightest accident, and the patient has recovered.

In the other case, the patient was in his seventieth year; the operation selected was lithotrity; the case to all appearances was not unfavourable; the operation of crushing the stone was effected without any difficulty; but on the day after the second sitting unfavourable symptoms set in, the man began to sink, and died within a week from the first operation.

The contrast between these two cases (and a similar one will often present itself to you in practice) is striking. We cannot avoid asking ourselves whence arose the difference in the results? Why one patient died, while the other recovered? Why lithotomy was selected in the one instance, while lithotrity was employed in the other? And these questions naturally lead to a consideration of two paramount points—viz., the indications which induce the surgeon to employ lithotomy in preference to lithotrity, or *vice versa*; and the different accidents which may supervene during or after these operations, either retarding the cure, or involving the life of the patient.

[Mr. Coulson then relates the following case:—

James F. was admitted on the 24th of March, symptoms of stone were evident and characteristic. It was soft and easily crushed between the blades of the lithotrite; fragments were found to consist of the triple phosphate, or ammoniaco-magnesian phosphate calculus. On the 25th the urine was found to be alkaline. On the 27th the lithotrite was again introduced, and the stone crushed, but local and constitutional disturbance soon after set in, the latter of a typhoid character, which terminated fatally on the 31st March. The heart, liver, and kidneys, bore considerable evidence of previous disease, and the left knee-joint, which a few days before had become swollen and inflamed, on being cut into, showed extensive ulceration of the articular cartilages.

Mr. Coulson observes:]

In the case of F., the local signs were evident, though, as I remarked, the constitutional disturbance never reached any considerable degree; and this is a point worthy of a moment's attention, when we reflect, not only on the great duration of the disease, but on the nature of the calculus with which the patient was affected. It was the triple phosphate or ammoniaco-magnesian phosphate calculus. This concretion is formed by an admixture of the neutral phosphate of magnesia and ammonia with a bibasic phosphate. It might appear to you at first sight that the chemical nature of the calculus could exercise little influence on the operation performed for its extraction, or that a knowledge of its composition could be of little use beyond the domain of chemistry; but it is always useful to know beforehand the nature of the stone in the case on which we are about to operate: such knowledge furnishes several indications which should not be neglected. Thus we know that the phosphatic calculi are generally friable, so as to be more or less readily crushed, and, what is of much more importance, we know that the deposition of the phosphates from urine usually takes place in debilitated subjects, in persons of broken-down constitutions, and is mostly accompanied by considerable nervous irritation, lumbar pains, and great general debility. Indeed, it appears highly probable that the deposition of phosphatic calculi requires a certain degree of irritation or inflamma- of the mucous membrane of the urinary organs, and their presence therefore indicates a highly disordered state of the urinary organs. They are readily deposited round any foreign body which irritates the bladder, or on such points of its mucous surface as have been most irritated by the calculus, or its fragments when broken up. This fact was illustrated by the post-mortem examination of my patient, and it is highly probable that the unfortunate complication which proved so suddenly fatal in his case, was connected with the irritative state of which the phosphatic secretion now alluded to was a result, and therefore an indication. The practical conclusion, then, that I would have you draw from this point, relative to the nature of the stone, is, that the triple phosphate and fusible calculi are, cæteris paribus, less favourable subjects, if I may use the term, for operation than the other varieties of calculi; and this remark applies both to lithotomy and lithotrity—the indication, however, rather pointing to an election of the former in cases where an operation cannot be avoided.

The next point for consideration is the relative ages of our two patients. If you ask me why I selected lithotomy for the boy and lithotrity for the man, I will tell you that I was mainly influenced by the difference between their ages. My own experience has convinced me that, in an immense majority of cases, lithotomy is successful when performed on patients under twenty-five to thirty years of age. Success, in fact, is the rule, and failure the very rare exception. This fact alone should lead us to hesitate before we abandon a method, the success of which in the young subject is placed beyond a doubt by the experience of nearly all surgeons in extensive practice. With old people the case is different. Here the proportion between deaths and cures from lithotomy is nearly balanced. Thus in Mr. Smith's cases at the Bristol Hospital, we find that between the ages of sixty and seventy, two patients out of every three died; between seventy and eighty, one in two; and from the extensive researches of Mr. Crosse, of Norwich, we learn that from forty to eighty years the proportion of deaths is one in four. The statistics of the Parisian hospitals give 105 deaths for 297 operations in old people, or one in two and four-fifths.

We shall presently examine the different circumstances under which death takes place from both operations, the symptoms to which they may respectively give rise, and the reasons for selecting one in preference to the other; but I may now remark that there exists a strong reason why lithotomy is, as a general rule, the preferable operation for children under twelve years of age. At an early period of life the genito-urinary organs are not sufficiently developed to permit the ready introduction and manœuvring of the instruments employed for crushing stone in the bladder; but this and other questions of the same kind will be more conveniently examined by-and-by. Let us therefore return to the case of F., simply remarking that his advanced age was an unfavourable circumstance under any method. The history of his case informs us that he laboured under paralysis—I should, perhaps, rather say atony—of the bladder, for a very considerable period previous to the operation. For ten years he had never been able to discharge his urine without the aid of a catheter, which he had learned to introduce himself. After death the muscular coat of the bladder was found much thickened, and its cavity was contracted. This you may at once remark to me is an extraordinary circumstance: the post-mortem appearances are inconsistent with the symptoms observed during life. How could paralysis of the bladder co-exist with the hypertrophy of the muscular coat and contraction of the cavity observed in the present case?

The atony of bladder which accompanies vesical calculus, is a condition that has not been studied with the same care which has been bestowed on many other points; nor are the circumstances attending it yet very clearly made out. When you reflect on the constant irritation produced by stone on an organ, the chief function of which, like that of the heart, is to contract on its contents for the purpose of expelling them, you can readily understand that vesical calculus very often produces hypertrophy of the bladder, with diminution of its cavity. These are the natural consequences of the repeated efforts of the organ to expel the foreign body, or of the repeated contractions excited by a permanent source of irritation. Indeed, one of the principal difficulties against which the surgeon has to contend, in the performance of lithotomy, or even lithotrity, is this hypertrophied, contracted, and irritable state of the organ, which gives it a tendency to contract still further on any additional irritation, and thus often renders it a matter of considerable difficulty, either to seize the stone with the forceps or extract it when laid hold of.

I have now to direct attention to the most interesting part of the case, both in a practical and pathological point of view.

The operation to which my patient was submitted had been performed without any difficulty on the 25th of March, and repeated on the 27th. After the second sitting, constitutional disturbance occurred, and was followed, on the 29th, by pain and swelling of the knee-joint, with typhoid symptoms, under which the man sunk in forty-eight hours.

The post-mortem appearances were, deposits of pus on the pericardium and in the knee-joints, a sacculated cyst of the bladder filled with fœtid pus, inflammation of the prostatic veins, and hypertrophy with contraction of the bladder.

The immediate cause of death, then, in the present case, was that unfavourable complication which sometimes accompanies every kind of operation, and is known by the name of *purulent infection.* Upon this I now propose to make some remarks, bringing them to bear, as far as possible, on the connexion of this accident with diseases of, and operations on, the genito-urinary organs.

Purulent infection may, perhaps, be a new name to you, for it is not treated as a distinct affection in many of our standard works on surgery, but you will readily understand the disease to which I allude from the following brief description:—

A patient has undergone an operation, say amputation of the leg, and everything appears to go on favourably for a short time, but without any appreciable cause the most serious symptoms manifest themselves; the patient is seized with severe rigors, followed by fever, and often by perspiration, which bear a very close resemblance to those of intermittent fever; the rigors are obstinate and return every day; they are soon followed by a state of prostration, the complexion becomes yellowish and dull, the tongue dry and brown, the pulse quick and feeble; there is often delirium at intervals, and diarrhœa with tympanitis. These general signs are, in a great many cases, accompanied by these of local inflammation in some organ or tissue, very often in the chest, sometimes in the abdomen, but far most frequently in some of the joints or cellular tissue of the extremities; the joints swell, become red and painful, or purulent collections form in the cellular tissue between the muscles. After death,—for these cases are very often fatal,—we find abscesses in the lungs, liver, &c., in the brain, heart, kidneys, uterus; or purulent infiltration of the extremities in which tumefaction was observed during life. The joints sometimes present traces of inflammation, as in F.'s case; but this is rare: more frequently they contain purulent matter, without any trace of ulceration or inflammation. The veins passing from the part which had been primarily injured are very often inflamed, and sometimes contain pus globules, and hence many surgeons consider the disease as essentially connected with phlebitis; but it is certain that the most careful examination has failed to detect inflammation of the veins in several instances. In some cases, I should observe, the symptoms are far from presenting the degree of seriousness just alluded to. There are no rigors; no great fever; no local signs of inflammation in the organs or joints: yet the patient sinks rapidly into a typhoid state, and after death the same purulent deposits are found in the lungs, joints, &c., as are observed in the more severe cases. The most remarkable part of the constitutional symptoms which accompany purulent infection are undoubtedly the rigors, followed by fever, which are extremely constant in their appearance, and have often led the surgeon to mistake the disease for ague. Several cases of this kind are on record: I shall relate one or two presently. It would appear as if each new deposit of pus in the tissues was announced by a rigor; but in many cases the rigors are absent, and the general symptoms confined to those of debility and rapid sinking. The pains in the joints may be mistaken for rheumatism, and when the skin over the articulation is at the same time red and inflamed, the error is more readily committed by those practitioners who are unaware how often and how unexpectedly the result I now speak of may complicate the most simple and slight operations.

Purulent infection may succeed any operation or injury which has given rise to a secretion of pus in the part locally affected. This is the principal fact which may be deduced from the observations made up to the present time. The severity of the injury, and the quantity of pus secreted by the injured tissue, do not seem to have much influence in determining the secondary affection. It occurs after amputations, fractures, lithotomy, &c, but it may likewise supervene on trifling operations, or after the excision of piles, venesection, the application of a seton or cautery; from a boil or a pustule, or even after vaccination. Legallois relates a case in which purulent infection followed the application of a seton to the neck for the cure of ophthalmia. Some time after, the patient was seized with violent rigors, fell into a state of extreme debility, and died on the fourth day. Purulent collections were found in the liver, but all the other viscera were healthy. No pus could be discovered in the blood, nor were the veins inflamed at any point.

Purulent infection may arise from phlebitis, and this form has been better studied by us than any other. Its connexion with puerperal fever and other affections of the generative organs in females, was long since pointed out by Drs. Fergusson, Davis, Lee, and others. In my work on 'Diseases of the Hip-joint' I have devoted a chapter to puerperal affections of the joints, in which the coincidence of purulent deposit into the articulations with a suppurative condition of the uterus is clearly established by several post-mortem examinations. In one of these cases the blood taken from the inferior vena cava just at its entrance into the auricle, was found to contain, besides the usual blood-corpuscles, pus-globules or true pus. These were special bodies, whitish and granular on the surface, with a shell easily rendered pellucid by sulphurous and acetic acids, and these showing three or four central molecules, these latter being unchanged by most acids, and easily dissolved by caustic alkalies. The diameter of the pus-globules was 1-3000 to 1-2400 of an inch.

But admitting the existence of pus in the tissues or veins of the part primarily injured, it still remains a question in what manner the secondary depositions of pus in the lungs, liver, joints, &c., take place Various explanations have been offered; but I am still inclined to adhere to the one which I published in the work just mentioned, and attribute them to a general contamination of the circulating fluid by the purulent matter absorbed into it. When this contamination has taken place, after the manner of a poison, we can conceive that the secondary deposits occur from metastasis, or that the vitiated blood circulating in the capillaries may, under certain conditions of disordered health, or the impulse of an injury, excite low inflammation, and thus produce secondary abscess or purulent infiltration. However this may be, it is certain that all these forms of purulent infection constitute one and the same affection, and that we take a limited view of the subject when we distinguish them, as has been too much the custom in this country, according to their immediate exciting cause. The affection of the joints which I called puerperal, is identical with the affection of the same parts which occurs after amputation, lithotomy, &c. Even the suppurative inflammation of the eye which was thought to be peculiar to the puerperal state is now well known to form part and parcel of purulent infection.—*Lancet, June* 5, 1852, *p.* 534.

[After some remarks on the real merits of the claims to invention of the various *Instruments used in the Operation of Lithotrity,* Mr. Coulson continues:]

Since 1834 many changes have been made in the details of various parts of lithotritic instruments, but none affect the principle on which

Fig. 1.

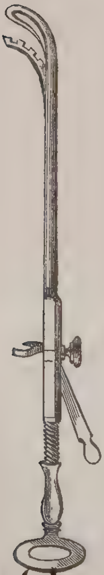

Fig. 2.

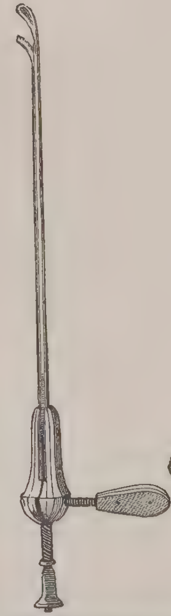

Fig. 3.

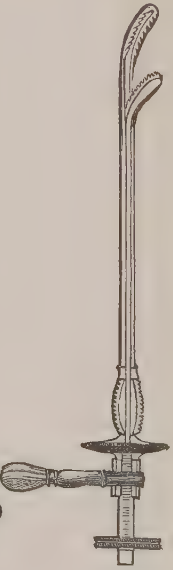

Fig. 1.—Weiss's latest improved lithotrite.
Fig. 2.—Fergusson's rack and pinion.
Fig. 3.—Charrière's rack and pinion.

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Fig. 4. Fig. 5.

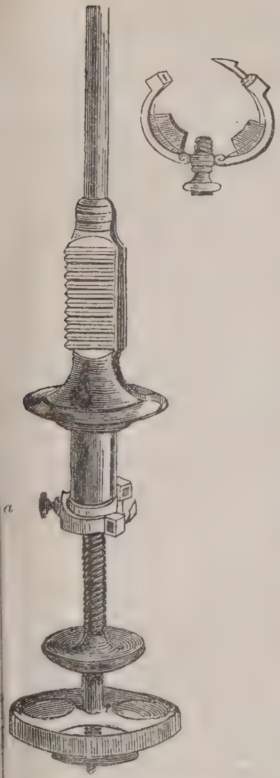


FIG. 4.—M. Civiale's latest instru-
nent for crushing with the hand or
he screw, or for employing percussion.
FIG. 5.—The jointed catch, which
s shown *in situ* on the instrument,
ig. 4 *a*.

they work. The blade of the female branch has been made wider and deeper, to receive the detritus; the screw has been replaced by the rack and pinion; the latter furnished with a round handle, as in Charrière's instrument; or with a ┳-shaped one, as in the English, to give additional force. To Mr. Fergusson we are indebted for the application of the rack-and-pinion system, which he introduced in 1834. It is unnecessary for me to notice all these improvements as they have been called, for almost every surgeon who has occupied himself with lithotrity appears to have thought it incumbent on him to make some change in the apparatus—occasionally for the better, often for the worse.

The instruments generally used at the present day for performing lithotrity are, the common screw one, the rack-and-pinion instrument described by Mr. Fergusson, and Charrière's last instrument, which likewise acts through a rack and pinion, but differs from the former in the shape of the handle.

Having thus comprised, in as brief a space as possible, the principal facts connected with the history of lithotrity, I hasten to its practical application. I shall at another time endeavour to explain to you in what cases lithotrity is to be preferred to lithotomy, for you are not to conclude that all cases of calculus in the bladder admit of being cured by the new operation. For the present, let us suppose that a case of stone suitable for the employment of lithotrity presents itself. How are you to proceed? What are the successive steps of the operation?

Stone in the bladder, as you are fully aware, is almost invariably .ttended by more or less severe derangement of the genito-urinary organs r of the general health. It is important, before proceeding to the peration, to remove these complications as far as possible; and hence hat has been termed the preparatory treatment. I do not now mean o say that you are to select your patients in such a manner as to operate only on those who are free from any complication. This would be impossible in hospital practice, and, moreover, would condemn many patients to perpetual suffering for the mere sake of enhancing your own reputation and appearing as a successful operator. What I mean is, that you must, by a preparatory treatment, remove all such local or general disorders as are likely to exercise any dangerous influence on the result of the operation.

Whenever the calculus is small, the bladder healthy, and the urinary passages show little or no signs of irritability, the patient is in the most favourable state, and preparatory treatment need not occupy your attention. But such cases are not very frequent. Patients seldom present themselves to you, especially with the idea of undergoing an operation for stone, until the urinary organs, and subsequently the general health, have more or less suffered. Here the patient must be carefully examined, and all unfavourable symptoms removed, or at least alleviated as far as possible, before you think of operating. The digestive organs often suffer in cases of stone. Endeavour to correct this derangement, and improve the condition of the intestinal secretions. Where the patient is much enfeebled, tonics should be administered; if, on the other hand, the circulation be much excited, general or local bleeding is indicated; but you must be cautious not to reduce your patient too much, nor to waste valuable time by continuing the preparatory system too long. If you relieve the most urgent symptoms, it is all you can expect to do in unfavourable cases. An excessive disposition of the bladder to contract on the stone should be combated by the use of opiates. The condition of the kidneys must be examined with the greatest care, for they are often diseased in long-standing cases of calculus. When the symptoms are uncertain and obscure, an examination of the urine will here be of great assistance.

The state of the urethra, prostate, and bladder, must, I need hardly say, be ascertained, and, above all things, we must endeavour to determine whether disease of these parts has given rise to the secretion o pus. The existence of purulent deposit in the urethra, prostate, bladder, and kidneys, is, according to my experience, one of the most unfavourable complications which can present itself, not only with respect to lithotrity, but any other operation on the genito-urinary organs. The pre-existence of such abscess is a powerful determining cause of purulen infection, and hence I would lay down the rule that every effort should be made to remove such a complication before we think of operating for stone in the bladder; and this remark applies to lithotomy just as wel as to lithotrity.

As part of the local preparatory treatment, M. Civiale insists much on the propriety of introducing a soft bougie for a few days, and during a few minutes at each time, so as to accustom the urethra to the contac of a foreign body, and diminish its irritability. He never goes beyond the natural calibre of the urethra, and rejects dilatation of that canal.

Other surgeons, however, employ flexible sounds, the calibre of which is gradually increased until a certain degree of dilatation ensues; but am of opinion that you had better leave your patient as tranquil as possible until the appointed time for operating arrives. The urethra, lik other parts, will bear irritation to a certain extent only, and it never can become habituated to much violence.

The next step may be considered as preparatory also, for it consists in exploring the bladder. A great deal has been said, by the opponents of lithotrity, on the inutility and danger of these preliminary explorations; but they are indispensable, unless, indeed, you are content to go to work completely in the dark. They are somewhat analogous to the usual operation of sounding previous to lithotomy; the proceeding, however, is somewhat different, for more precise information is required; or, perhaps I should rather say, that lithotritists are more careful in ascertaining every particular connected with the state of the bladder, the size of the stone, &c., than lithotomists commonly are. Remember that you have to work for a considerable time with a steel instrument, on perhaps a hard body, in the interior of a small, contractile, and highly sensitive cavity. It is therefore indispensable to obtain some idea of the cavity and contractile power of the bladder before you proceed to break up a stone in this organ. A moderately sized sound, with a small curve, (this latter circumstance is essential), is introduced into the bladder, and, being rotated, conveys a knowledge of its capacity, while the manner in which the urine escapes will enable you to form some estimate of the contractibility of the organ. Should the bladder be extremely irritable, or, on the contrary, in a state of atony, the operation must be adjourned.

Having thus ascertained that the bladder is in a condition to bear further exploration, you now continue your examination. When the bladder is contracted the flow of urine must be prevented, and the point of the sound should be directed at once downwards towards the rectum, where the stone is most likely to be found, and the conditions of which part of the bladder, from its relation to the prostate, are most important to be known.

The most experienced surgeons have, from time to time, failed to detect the presence of a stone in the bladder by the usual method of sounding. In doubtful cases of this kind M. Civiale advises us to inject some fluid into the bladder, and to repeat the injections at short intervals, so as to vary the capacity, keeping it at one time full and the next moment empty; and in this way the bladder is excited to contract, its form and capacity are made to change, and it rarely happens that, as the walls of the bladder close round the end of the instrument and the calculus, the latter is not placed in contact with the former.

Certain diseases of the prostate may cause such a depression of the bladder behind the gland, as to render it impossible to discover the stone by the ordinary method of sounding; and the same result may arise from fungous tumours, &c., at the neck of the bladder. In these difficult cases the curve of the sound must be increased, and if this fail, you must have recourse to the lithotrite, which you are to use as a sound. The small size of the calculus has always been an obstacle to its detection with the common sound. If you meet with a case of this kind you must inject two or three ounces of fluid; next introduce the lithotrite, and open its blades from time to time, when the calculus is usually seized.

Having seized it between the blades of the instrument, you next endeavour to ascertain its size; but this can be done only approximatively, for when the calculus is large, or of an oval form, it is quite impossible to measure its size with any degree of accuracy.

These various points will be of great assistance to us in the operation which is subsequently to be performed. If we examine the practice of the most successful lithotritist of the present day—one who has performed more than 600 operations—we can hardly attribute his unexampled success to any other cause than the great attention he bestows on these preparatory arrangements. Many surgeons exceed him in manual dexterity, but none bestow so much care on the medical and accessory points of each case; and hence, I believe, the success of his practice.

On the position of the patient a few words only need be said. The patient is placed on a bed or couch with the pelvis slightly raised, so as to bring the most depending part of the bladder on a line with the internal orifice of the urethra. The legs are to be separated; the thighs slightly flexed; the surgeon stands on the right side of the patient. Having drawn off the urine with a catheter, he next proceeds to inject slowly some tepid water, continuing until the patient experiences a desire to evacuate it; the quantity required generally varies from five to ten ounces. If the fluid be expelled the injection must be repeated, for you should never think of attempting to operate when the bladder is empty. In some cases the bladder, as M. Civiale observes, is thickened and extremely irritable, tending to eject the smallest quantities of the fluid introduced. Here the injection must be conducted with extreme slowness—a small quantity at a time only being thrown in—and the patient allowed to repose between each injection; or the urine may be allowed to accumulate naturally in the bladder. If the irritability continues, you must cease your attempts for the moment, and adopt other means, as leeching, hip-baths, opiate clysters, &c. Chloroform has been tried in some cases of this kind, but without effect, the contractions of the bladder remaining undiminished, though the patient was completely insensible.

The instruments employed for injecting the bladder are a large-sized silver catheter with a stop cock, and a metallic syringe, capable of holding half a pint and of being accurately fitted to the catheter.

We now arrive at the introduction of the instrument. The early ones as I remarked before, were all perfectly straight, for curved instruments were not introduced into use until 1831 or 1832. Still you must remember that the curve of the lithotrite differs considerably from that of the ordinary catheter. The elbow, as you see, is very abrupt, the ascending part is much shorter, and in many instruments the forceps portion is much flattened, to give solidity to the branches. In introducing the instrument the abruptness of the curve must not be forgotten; and the principal point you have to attend to is to keep this curved portion constantly in the direction of the canal, especially while the instrument is passing under the arch of the pubes and through the neck of the bladder. Proceed, therefore, with the utmost gentleness, feeling your way as you go along. When you arrive at the bulbous portion of the urethra, the penis and handle of the instrument should be brought to a right angle with the body of the patient, by which you bring the curve of the instrument under the pubic arch. This done, you slowly depress the handle, advancing it at the same time until the bladder is reached. The amount of depression will depend on the curve of the instrument you use; the shorter the curve, the less you need depress, but the principle to be followed must guide you; that is to say, you must endeavour to make the curve of the lithotrite follow the natural curve of the urethra.

There is seldom any difficulty in passing the instrument, at least in ordinary cases. When the prostatic portion of the urethra is healthy, the lithotrite, such as we now use, passes readily enough, but if there be any tumefaction of this gland, you must depress the handle of the instrument proportionately, so as to throw up the point and clear the obstacle. I must again caution you against using the slightest force during any of these proceedings. The young operator should never forget that it is very possible to lacerate the lining membrane of the urethra, and that this accident may occur without any great amount of force, especially while the instrument is traversing the membranous portion of the canal.

You have now the instrument in the bladder. The next step is to seize the stone. This is easily done when the calculus is small and the blades of the lithotrite large. The blades are, at first, kept closed, and moved in a sweeping direction, with the convexity downwards, from before backwards, along the bas-fond and posterior surface of the bladder; it is then drawn back a little, and the convexity directed to the right or left side, each of which is explored in its turn; lastly, the point of the instrument is directed upwards, and downwards to the space immediately behind the prostate. The instrument should then be carefully rotated, in order to come in contact with the foreign body. This found, the blades of the lithotrite are cautiously opened, and the instrument is pressed on the stone laterally; after which, the blades are closed with the same caution, every effort being made to seize the stone as much towards its centre as is possible. This is an affair of dexterity which practice and great tact alone can attain. It is of importance to remember that the female branch should be kept perfectly immovable while you are closing the instrument, otherwise you run the risk of displacing the stone, which generally lies against its ascending branch.

Having seized the stone, the surgeon must next satisfy himself that nothing besides the stone is included between the branches of the instrument. At an early period of lithotrity, the mucous membrane of the bladder was more than once pinched up, and ground together with the stone; but such an accident, which mainly depended on the imperfect nature of the instruments then employed, is, I believe, unknown at the present day.

Once firmly fixed between the blades of the lithotrite, the calculus is generally broken down without any difficulty, Many surgeons employ pressure with the hand only; and this answers well enough when the stone is not too large or hard. In other cases the use of the screw becomes necessary. Its slow propulsion soon causes the calculus to yield; and if we employ the rack-and-pinion system, a rapid succession of slight jerks may be communicated, which produce many of the effects of percussion. Should the stone, from its hardness, resist pressure, we must have recourse to percussion as an auxiliary, and Charriere's instrument admits of our employing this mode without withdrawing the lithotrite from the bladder. It is, in fact, both a percussor and a crusher at the at the same time.

Before withdrawing the instrument from the bladder, it is essentially necessary to ascertain that the branches are perfectly closed, and that no detritus has accumulated in the forceps portion. If this be not done, you may encounter an unexpected obstacle when you arrive at the urethra. A few turns of the screw backwards and forwards will usually suffice to clear the instrument, or Mr. L'Estrange's stilet may be used, if the male branch be grooved to allow of its passage.

It is only in exceptional cases, and when the stone is both small and very friable, that you expect to break it up at a single operation. The first proceeding should always be short, and when the passage becomes accustomed to the instruments, or less irritable, the operation may be prolonged for ten minutes at a time. This is a rule from which M. Civiale never deviates, and his opinion in this matter deserves the deepest attention. From three to eight days should elapse between each operation, to allow the fragments to pass away with the urine, and any irritation which the operation may have excited to subside. Such fragments of the calculus as are too large to come away with the urine must, of course, be treated as distinct calculi, and crushed separately.

The accidents which sometimes supervene on the operation of lithotrity are, if we believe some surgeons, severe and numerous. Professor Velpeau, in his work on 'Operative Surgery,' enumerates no less than twenty-nine; but this is a great exaggeration.

The first to which I would direct attention, is the lodgment of the calculous fragments in the canal of the urethra. This is by far the most frequent accident to which patients who have undergone lithotrity are liable. A distinguished operator asserts that it occurs about once in four times. The younger the patient, the more likely is he to suffer from this complication, and for two reasons: the neck of the bladder is very dilatable in the young subject, and hence may give passage to fragments which are too large to traverse the other portions of the canal; and again, the bladder in young persons contracts with a considerable degree of energy, whereby the detritus, even when fine, is apt to be driven in large quantities through the neck, and accumulate in the urethra, which it blocks up more or less completely.

The same accident often occurs in the adult; and the symptoms to which it may give rise, if neglected, are of a very severe nature. The foreign body produces inflammation and ulceration of the canal, followed by effusion of urine, &c., irritative fever, and perhaps death. This latter event has occurred more than once in the early period of lithotrity, surgeons experienced in other respects never having thought of ascertaining whether a fragment of stone was arrested in the urethra, and the cause of the patient's sufferings remaining completely unknown until after death.

The fragment may be stopped at any part of the urethra, but the commonest seats are the neck of the bladder, the membranous portion, the middle of the spongy portion, and the fossa navicularis. Contraction existing at any part of the canal, whether spasmodic, or of a more permanent nature, will favour the retention of detritus; and you may expect the accident to occur whenever the urethra is very irritable, the contractile power of the bladder great, and the quantity of detritus resulting from the first operation considerable. These three conditions are evidently the most favourable to the development of the accident which we are now considering, for you have a large mass of matter acted on by a strong propelling force, and an excessive contractility of the canal through which the matter or detritus is to be driven.

The symptoms arising from impaction of a fragment in the urethra are various. A fragment of any size, particularly if it be hard and rough, soon produces more or less sensation of uneasiness in the part, and this quickly passes into pain. The patient suddenly discovers that he is unable to pass his water as freely as before, or he may have complete retention; at all events, micturition is difficult and painful, while the desire to pass water is frequent and urgent. Should the obstacle escape the notice of the surgeon—an error now very unlikely to occur—or should immediate relief be not afforded, general symptoms soon set in; and it is a remarkable fact, that these are very often totally disproportioned, speaking theoretically at least, to the local cause whence they arise. You could never imagine, *à priori*, that a small fragment of stone in the urethra would produce the severe and dangerous constitutional disturbance which it often does. The patient becomes nervous and irritable, he is unable to sleep, irritative fever may ensue, preceded or accompanied by severe rigors, &c.; and if the bladder becomes irritable at the same time, from retention of detritus, the case may terminate fatally. A highly interesting and instructive case of this kind occurred some time ago in the practice of Mr. Fergusson, at the King's College Hospital. The impaction of fragments in the urethra, in this case, caused excessive local pain, followed by a high state of constitutional irritation. The fragments were removed with the urethra-forceps, or broken up; but the accident recurred: the urethra became inflamed; the inflammation extended to the bladder, ureters, and kidneys; an abscess formed in the groin, and the patient sank, in a deplorable state, after three weeks' suffering. This case, and many others of a similar kind on record, show us that too much attention cannot be bestowed on the accident to which I now allude. It requires prompt and effectual means for its relief.

As soon as you have any reason to suspect its existence, a sound should be passed into the urethra, to ascertain the nature and seat of the fragment; for the remedial means differ somewhat according as the fragment may have become impacted in the interior, the membranous, or the vesical portions of the urethra. A large metallic sound may be used at first; but if you fail to meet the foreign body with this instrument, the symptoms continuing all the while, a large-sized soft bougie is to be passed down the urethra, for it is possible that the fragment may be lodged in one of the lacunæ. If this be the case, the edge of the fragment, as M. Civiale observes, seldom fails to leave a mark on the bougie, whereas a metal sound might pass over it without any sensation being communicated. Having ascertained the seat of the fragment, our next care, of course, is to remove it without delay. For this several means have been proposed, and each may be employed with success according to circumstances. The fragments may either be pushed back into the bladder, extracted whole, broken up in the urethra, or removed by external incision. But prevention is better than cure; and I shall therefore now briefly notice the precautions which M. Civiale's great experience has suggested for the prevention of the accident.

The surgeon can, generally speaking, form a pretty correct idea of the cases in which impaction is most likely to occur, and in such cases he should employ the precautionary measures I am about to mention. Thus, let us suppose that the neck of the bladder and membranous portion of the urethra are very irritable, and at the same time dilatable; that the bladder is capable of contracting with considerable force; that your first operation has given rise to a good deal of detritus. In such cases you may apprehend impaction of the fragments, and should take your measures accordingly. The patient should not be allowed to make water while on his knees, but must endeavour to do so while on his back. Immediately after the operation, several injections of tepid water should be thrown into the bladder by means of a large catheter, with large eyes, and this for the purpose of removing as much detritus as possible. If the bladder be very irritable and contractile, it is necessary, as soon as the first operation has terminated, to introduce a large flexible sound into the bladder, and leave it there. You thus fill the canal of the urethra, and prevent the passage of detritus; but in some unfavourable cases the patient is unable to bear any instrument permanently, and hence, if it causes too much irritation, you are not to persevere.

When operative proceeding becomes necessary, it may be directed, as I have said, to the object of pushing back, extracting, or breaking up the fragment. If the latter be impacted in the neck of the bladder, or behind the triangular ligament, you should, in the first instance, make an attempt to push it back into the bladder. If the fragment be small, and seated near the neck, this can be easily done with the sound or bougie. Should any resistance be experienced, it will be well to try the effect of injecting tepid water with some force, while pressure with the catheter is exercised at the same time. M. Civiale speaks highly of this as an auxiliary means, and you should never neglect having recourse to it. On making pressure with the catheter, great care must be taken that the instrument does not pass forwards between the wall of the urethra and the foreign body, or even make a false passage, which might readily occur if too much force were employed with a metallic instrument of small calibre. Indeed, in all operations on calculous patients, you cannot too strongly bear in mind that the mildest means are the best, provided they be efficacious. The genito-urinary organs are seldom in a state of perfect health; they take on irritation or inflammation most readily, and this latter may within a few hours convert a favourable case into one of hopeless danger.

Should you find it impossible to push back the fragment from the membranous portion of the urethra, where impaction very often takes place, you have only the choice between extraction or crushing. Whenever the former can be effected without much difficulty, it is to be preferred. Sometimes a blunt hook has been employed, sometimes forceps of various kinds, called "urethral forceps." From the dilatable nature of the membranous part of the urethra, fragments seated there may be often broken up without any great difficulty. Some surgeons crush them between the blades of a strong forceps, others employ small lithoclasts with flattish short blades, such as the one of which I now show you a drawing. If you can succeed in seizing the fragment with this instrument, it is easily crushed; but you must take care not to pinch the walls of the urethra between its blades. It must also be borne in mind that the manipulation of instruments in the urethra is a more delicate and painful proceeding than that of crushing a stone in the bladder. The vital tissues are in close contact with the forceps or lithotrite, and every movement produces more or less pain.

Fig. 6.

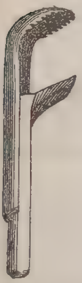
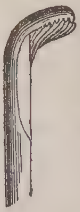


Fig. 7.



M. Civiale's Urethral Lithoclast.
Fig. 6 —Shows the instrument open.
Fig. 7.—Shows the instrument closed.

The fragment, again, may be impacted, not in the membranous portion of the urethra, but at some point anterior to it, between the glans and bulb. It was formerly the practice to treat all cases of this kind by external incision, and I may here remark, that if every other means fail, you must have recourse to the knife; but in modern practice such a necessity does not often occur, in connection with lithotrity at least. However, if the fragment were large, the patient irritable, and any difficulty in seizing the foreign body presented itself, I should prefer cutting into the urethra to the risk of lacerating the corpus spongiosum by any degree of force. The fragments may be extracted or crushed, as in the former case; the straight two-bladed forceps with elastic branches, contained in a sheath, may be employed for extraction; or when the fragment is small, a blunt hook, a probe, &c., may be used; and the operation is generally the more easy, since the penis can be grasped behind the fragment, so as to prevent its displacement, whilst an assistant draws the organ forwards. In this way, the blades of any well constructed forceps can generally be passed on either side of the fragment without much difficulty, or it may be crushed *in situ* with an urethral lithoclast, the male blade of which is much shorter than the female one, as you see in the drawing.

Finally, a considerable fragment of the calculus may become impacted in the fossa navicularis, and produce retention of urine and detritus behind it. I show you drawings of instruments which have been contrived for the extraction of fragments from this situation.

Fig. 8.

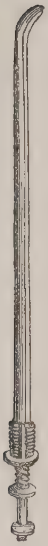


Fig. 9.

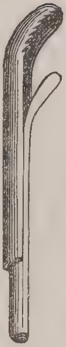


Fig. 10.

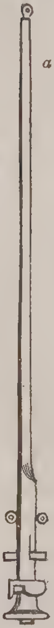


Fig. 11.

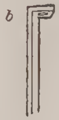


Fig. 8.—M. Civiale's lithoclast for fragments in the straight part of the urethra.

Fig. 9.—Shows the extremity of the instrument open.

Fig. 10.—M. Leroy d'Etoilles' instrument for the extraction of fragments from the urethra. It is a flat cannla, having at the end a small scoop, hollowed like an earpick, which is capable of being bent to a right angle by means of a hinge and a stilet, which traverses the canula; *a* shows the end of the instrument as it is introduced behind the fragment.

Fig. 11.—*b*, the end now bent to a right angle, so as to embrace the fragment.

From the situation of the obstacle, so close to the external orifice of the urethra, you might imagine that it should be extracted with hardly any difficulty. But this is not always the case. The fragment is too firmly impacted to be removed with the forceps, or even seized between the blades of any instrument; and in such cases it becomes necessary to divide the external meatus slightly, with an instrument similar to that used for the internal division of stricture.

Let us now turn to the other accidents, *real* or *presumed*, of lithotrity.

There is here an important distinction to be made, indicated by the two words I have just employed, for many of the accidents attributed to the operation do not essentially belong to it; and in estimating the value or applicability of any new operation, we must be careful to distinguish those accidents which may be fairly connected with the proceeding, from such as depend on causes that are foreign to it—want of skill in the operator, imperfection of instruments, &c.

Keeping this distinction in mind, let us now consider the principal accidents which may complicate an operation of lithotrity, beginning

Fig. 12.

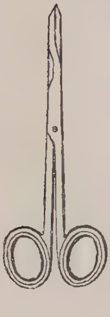


Fig. 13.

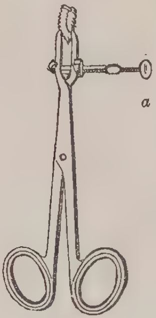
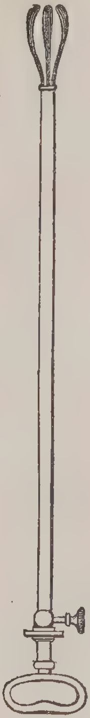


Fig. 14.



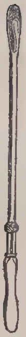


Fig. 15.

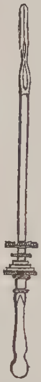


Fig. 16.

Figs. 12, 13.—M. Leroy d'Etoilles' forceps for the extraction of fragments; when the latter are too large to pass readily through the fossa navicularis, they are crushed by the hook and screw, fig, 13, *a*, attached to the blades.

Fig. 14.—Hunter's urethral forceps modified.

Figs. 15, 16.—Weiss's instruments for the extraction of calculi from the urethra. Fig. 15 shows an instrument open; fig. 16, an instrument closed.

with those which I have denominated *presumed*—that is to say, which are not necessarily connected with the operation, but depend rather on the operator, his instruments, and defective modes of proceeding; and, above all, on perseverance with the operation in cases for which it is manifestly unsuited. In scientifically discussing the merits or demerits of any surgical operation, we have no right to lay all that may occur to the door of the operation. One of our museums contains the trachea of an unfortunate patient, with a large molar tooth sticking in it, which a bungling dentist allowed to drop into the larynx while performing the operation of extraction; yet who would think of saddling the operation with the result of such an untoward event? It is the same for many of the objections made to lithotrity.

Thus, it is said the urethra and neck of the bladder may be lacerated, either during the introduction or withdrawal of the instruments. Such an accident has undoubtedly occurred and more than once, at an early period of lithotrity; but we may fairly deny that it is necessarily connected with the operation. The size of the curved lithotrite now employed does not exceed that of a large catheter, and, when properly introduced, the manipulation is seldom more difficult than the common operation of passing an instrument to draw off the urine. If a surgeon were to lacerate the urethra or neck of the bladder while passing a catheter to empty this organ, you would not surely attribute the accident to the operation, but to the operator.

In certain cases, indeed, where the prostate is much enlarged, where tumours block up the neck of the bladder, &c., violence may be committed; it may be impossible to avoid inflicting a certain amount of injury on the canal: but here again, I would ask you, should we not rather attribute any accidents which occur to the injudicious attempt at applying lithotrity to a case for which it is not suited? If you attempt to force a small stricture with a metallic sound you may easily lacerate the walls of the urethra; but is this an argument against methodical dilatation, practised according to the rules of our art? Are you to reason from what may occur to what should occur?

As for laceration or injury inflicted during the withdrawal of the instrument, they can occur under two circumstances only. If the urethra and neck of the bladder have admitted the lithotrite, they should also allow of its extraction, unless the instrument has become deformed in the bladder; and this may arise in two ways: the instrument bends or breaks—I shall presently allude to this; or the instrument may be deformed—that is to say, the branches beyond the curve may be more or less separated from each other by the detritus engaged in the dentated and concave portions. Should this separation take place to any degree, and the operator persist in withdrawing the unclosed blades with force, he must inevitably lacerate the neck of the bladder or a narrow portion of the urethra. Here again I may ask, does not the accident depend on neglect of the rules which experience—I might even say common sense—have established? I told you before, that you should never think of withdrawing the lithotrite without examining the scale to see whether there is any separation of the blades, from detritus or any other cause. In such case no attempt at withdrawing the instrument is to be made until the detritus has been removed by the means which I have pointed out to you already. If, as has occurred in many unfortunate cases, the surgeon endeavours to force an instrument through the canal, well knowing at the time, or at all events having it in his power to know, that the instrument is too large to traverse the urethra, is it the fault of lithotrity if he lacerate this canal?

The instruments may break in the bladder, or they may bend and warp, their extraction producing then formidable injury or even fatal results. This objection was much insisted on many years ago, yet at the present day it appears so futile that one is almost ashamed to discuss it. Are the faults of the cutler to be saddled on the surgeon or on surgery? Does imperfection of the instrument necessarily imply imperfection of the art? Our forefathers employed wooden cannon, which of course often burst and destroyed more friends than foes; but this proved nothing against the inefficiency of gunpowder as a propeller of balls. To have any value, it should be shown that the amount of force necessary for crushing calculi is of such a degree as to render it probable that the instruments employed must either yield or break. It were useless for me to discuss the causes which formerly led to the accident I now consider. It was partly the fault of the instrument, partly of the surgeon; it is, I believe, almost unknown at the present day: it never occurred in the hands of the surgeon to whom we are indebted for lithotrity, and who has performed more than 600 operations without ever having to deplore so unfortunate an accident. To guard against it, as far as possible, the surgeon should never think of operating on the living body without having previously assured himself, by experiment on hard substances, that his instruments are well-made, well-tempered, and capable of supporting the amount of pressure they are intended to exercise; and, should the accident occur, he must be prepared to cut into the bladder, and either extract the fragment or redress the deformed instrument as best he may. You will never, I trust, be reduced to so terrible an extremity.

The mucous membrane of the bladder may be pinched up between the blades of the instrument, or lacerated; and the bladder itself has been perforated. In ordinary cases it is difficult to understand how such accidents can occur with the instruments now employed. The bladder is more liable to be pinched when the calculus is very small, or while the surgeon is endeavouring to seize the fragments of a stone already comminuted. The accident will also be favoured by the practice sometimes employed, of allowing the injection to escape suddenly from the bladder, in order to induce this organ to contract, and bring the calculus within the grasp of the instrument. This is a faulty method, adopted to supply want of dexterity. With the flat, broad crusher, the surgeon will be able to avoid including the walls of the bladder within the blades; but if such an accident did arrive, his own sensation of a soft body and the feelings of the patient would, I think, give him sufficient warning to desist in time.

[*Lithotomy.*—In speaking of the performance of the *lateral operation*, Mr. Coulson lays much stress upon the importance of preliminary treatment to the patient. As much care should be taken as if lithotrity were about to be performed. He says:]

I am accustomed to clear out the bowels on the night previous to the operation, and to administer two clysters, one in the morning, the other about an hour before the operation. The second injection must of course have been expelled before you think of beginning to cut your patient. It will also be necessary, on the day previous to the operation, to examine the state of the prostate gland, and take the measures, if I may use such a term, of the perineum and pelvic outlet in their various diameters.

The instruments now employed for the lateral operation are few and simple: a straight knife for the external, and a probe-pointed bistoury for the internal incision; a grooved staff, and forceps for extraction, are all that are essentially requisite; but it will be prudent to have in readiness needles and tenacula for taking up vessels, canulæ for plugging, and even the actual cautery in case of extreme need, and scoops in case the calculus breaks, or cannot be seized by the forceps.

A great deal has been said about the position of the patient. He should be placed evenly on his back, and supported by pillows, on a table of convenient height, about two feet and a half from the ground. Having clearly ascertained the presence of a calculus in the bladder with a sound or with the staff—I prefer the former myself—the surgeon now proceeds to prepare his patient by having the hands and feet firmly bound together, chloroform having been previously administered.

The operation is made up of several parts or acts which succeed each other in a given order. These are, the introduction of the staff, the external incision, the division of the membranous portion of the urethra, the division of the prostate, and, finally, the extraction of the stone.

Let us describe each of these acts in their order. The use of a grooved staff for conducting the instrument during the internal incision, was an immense improvement in lithotomy. De Romanis, I believe, was the first who employed it, and his instrument does not differ much from the one now commonly employed. The staff should be full-sized, sufficiently long and curved to enable the point to enter fairly into the bladder. Le Dran, Poteau, and, in our own time, Mr. Aston Key, proposed straight staffs, because the point of the knife slips more easily along the straight groove. The groove in the staff should be as deep as is consistent with the solidity of the instrument; it is made either to one side, or along the convexity of the curve, and should cease about a quarter of an inch from the extremity, in order to prevent the knife from passing on too far into the bladder. The staff is entrusted to an assistant, who is directed to hold it firmly with the handle in the vertical direction, and the plane of the instrument in the middle line. Many surgeons advise us to direct the handle gently to the right side, so as to make the convexity project slightly on the left side of the perineum, which acts as a guide in the first incisions. Deschamps also gives the same advice, because the inclination of the staff removes the urethra away from the rectum. My own experience, however, inclines me to affirm that there is no necessity either of pressing the convexity of the staff down on the middle line of the perineum, or of directing it towards the left ischium.

The direction of the instrument should, on the contrary, correspond as clearly as possible to the natural curve of the urethra; and the staff should be held in such a manner, during the course of the operation, as not to alter a single natural relation of parts.

Having thus fixed the staff, and entrusted it to a proper assistant, the surgeon places the fingers of the left hand on the right buttock, and with the thumb makes the skin of the perineum tense. In doing so he must be careful not to draw the skin up too much, because if this were done, the superior angle of the wound would fall too low after the completion of the operation, and thus give rise to much inconvenience. With a common scalpel the first incision is now made into the integuments. This should commence three or four lines on the left side of the raphé, about one inch above the anus, and be carried obliquely downwards and outwards, a little below the level of the tuber ischii, and a little nearer to that point than to the anus. The length of the incision will depend on the size of the perineum, and, generally speaking, extends in the adult from three to three and a half inches. In children, the first incision should commence according to their age, at five or seven lines above the anus. Deschamps was in the habit of terminating the incision at about an inch from the left border of the anus, and did not often exceed an inch and a half or two inches in length, except when the calculus was supposed to be large. He inclined the incision eight lines from the anus, and four lines from the ischium. Other writers advise that the external incision should terminate midway on a line drawn from the tuber ischii to the anus; but I think it may be slightly lateralized without danger and with advantage,—that is to say, carried a few lines rather towards the ischium than the middle point alluded to.

In making this, the first incision, care must be taken neither to commence too high up, under the arch of the pubes, nor too low down, near the rectum, and not to carry it too obliquely on the ramus of the ischium. There are several objections against commencing your incision too high up; a high incision brings you down on the bulb, which may be wounded or its artery divided; it also makes the operator commence his internal incisions too far forwards; hence a greater length of the canal than is necessary is divided, and what is worse still, during extraction, the calculus is brought into an unfavourable position—that is to say, towards the apex of the triangle instead of towards the base. If the incision be commenced too low, the rectum runs great risk of being injured; and by carrying the oblique incision too much towards the left side, especially at the lower part, we encounter the risk of dividing the internal pudic artery as it ascends along the ramus of the ischium, an accident of the most troublesome, if not dangerous, nature, for it is very difficult to secure the vessel in this position.

Some operators formerly, rather than now, were in the habit of cutting down on the groove of the staff with a single incision; but, unless the perineum be extremely shallow, I would not advise you to follow this example. On the other hand, you must not grope about or lose valuable time, but with a few rapid touches of the scalpel continue your incision to the staff. In thin persons or children this is very soon found; in others, the finger soon distinguishes the bulb of the urethra, and near to it the convex surface of the staff, as it enters the membranous portion of the urethra. The left index-finger is now passed to the bottom of the wound, the nail soon falls on the groove, and serves to guide the point of the knife on the staff.

The first incision divides successively the integuments, the fatty cellular tissue about the anus, the transverse muscle of the perineum, the fatty cellular layer between the left erector penis and accelerator urinæ muscles, and some fibres of the levator ani muscle. The superficial artery of the perineum is likewise generally divided. Having distinctly felt with his nail the groove of the staff, and directed the point of his knife along the finger, the surgeon's next care is to open the urethra. Formerly lithotomists were in the habit of making this opening much too far forwards; but since Cheselden's time all are agreed that the bulbous portion should never be touched. The best point to open perhaps, is as close to the anterior part of the prostate as possible. This was Mr. Liston's opinion. Mr. Allan says we should enter into the membranous portion of the urethra about half an inch in front of the prostate. Deschamps made his opening in such a manner as to divide eight or ten lines of the membranous portion of the canal. When the point of the knife has once entered the groove, the surgeon should ascertain by a slight motion of the point, from side to side, that it really is in contact with the staff; and directing the edge upwards and inwards, he makes a small incision through the membranous portion of the urethra. The object of this incision is to make an opening for the instrument which will presently be mentioned. Some operators, following the original example of Cheselden, cut onwards along the groove of the staff into the bladder with the same knife which served to make the first incision. Mr. Liston used commonly to operate in this way, and it is at once elegant, simple, and expeditious, but it is not always easy to keep the point of the knife perfectly in contact with the groove of the curved staff. Hence the practice often adopted in this country and abroad, of completing the internal incision with a button-headed bistoury. It is the safest method, and the one which I generally follow in my own practice.

I cannot exactly tell you who was the inventor of the button-headed bistoury. The first distinct notice I can find of it is in Deschamps; Langenbeck also produced a button-headed knife, which is much used in Germany, and Mr. Blizard proposed another. Le Dran also appears to have used an instrument of the kind.

Having made this opening into the membranous part of the urethra, and taking care to keep his nail well in the groove, the surgeon abandons the scalpel, and substitutes for it the button-headed bistoury. This he directs along his finger to the groove of the staff, and having fixed the knob in the groove, he passes the knife onwards until it reaches the bladder, dividing a small portion of the membranous part of the urethra and the left side of the prostate obliquely, together with some of the anterior fibres of the levator ani muscle.

In making this internal incision, the handle of the knife must be depressed to the lower angle of the wound, while its cutting edge is inclined outwards and downwards, in the line of the external incision, the edge of the knife being kept nearly parallel to the ramus of the ischium. As soon as the knife enters the bladder, a little urine commonly escapes; the knife is now to be withdrawn exactly in the direction of the external wound, after which the incisions may be considered as being completed.

Although the description of this part of the operation has not been long, and though nothing appears more simple than to divide the prostate with a knife running along the groove of a staff which guides it in a sure manner, yet this internal incision is the most essential part of lithotomy, and the success of the operation will mainly depend on its being effected in a proper manner.

A few words on this point may be useful. From the moment lithotomy began to take rank as a scientific operation, and was transferred from the hands of quacks to the great masters of our art, the following question was debated, and still occupies attention:—"Should the internal incision be carried freely through the prostate and neck of the bladder, or are moderate incisions, with subsequent dilatation, to be preferred?"

Allow me to mention my own opinion first; I shall then endeavour to lay the opinions of other surgeons fairly before you. I have had some—I may say, without presumption, a large—experience in lithotomy, and the result of my experience is, that the incision through the prostate should be free enough to allow of the extraction of the stone without much violence, yet not too free, for fear of hemorrhage or infiltration of urine into the extra-aponeurotic cellular tissue. I am therefore an advocate for moderate incisions, followed by gentle dilatation during the extraction of the calculus. What I now say applies to cases in which the stone is not very large; when the latter exceeds a certain size, other modes of extraction become necessary. But it is not enough to say that the internal incision should be moderate or should be free; we must endeavour to define what these words mean, otherwise the operator is left in the dark, and may be making a dangerous incision while he fancies that he is proceeding in a moderate manner.

A moderate incision, according to my meaning, is one which does not pass through the whole depth of the prostate, but leaves a few lines of that body, near its base, and the capsule, undivided. A free incision is one which divides the whole of the prostate; and an extremely free incision would be one involving also a portion of the neck of the bladder. Mr. Samuel Cooper, in his dictionary, affirms that most lithotomists prefer a free internal incision—one which passes through the whole of the prostate and part of the neck of the bladder, without touching the body of that organ. This may have been true at the time when Mr. Cooper wrote, but it certainly does not represent the opinion of the best operators of the present day.

Frère Jacques, it would seem, divided the whole of the prostate and a small part of the body of the bladder. It is not easy to say to what extent Cheselden carried his internal incision, but I am inclined to think that it was rather a free one than what I have defined as moderate. Frère Come, Le Dran, Le Cat, Klein, Souberbeille, &c., also employed free incisions.

The inventor of the lateral method, the great Franco, was the first who understood the advantages of a moderate internal incision. "The smaller the incision (says Franco) the better, provided the stone can pass through it, but, on the other hand, it must not be too small, so as to give rise to much violence in the extraction of the stone. *Bref, il est requis de tenir médiocrité.*" One would imagine that another great surgeon of modern times, Sir Astley Cooper, had this passage in his mind when he said, "the longer I practise, the more I am convinced that the smaller the internal wound made in lithotomy the better."

Scarpa has been the principal advocate of moderate internal incisions; and he has been followed in this advice, by Sir Astley Cooper, as I have said, by Dupuytren, Callisen, the late Mr. Crosse of Norwich, Mr. Liston, and by most lithotomists of the present day.

In the standard work of Dr. Gross on the 'Urinary Organs,' I find it stated that the practice of American surgeons is in strict conformity with the same principle. "The wound," says Professor Gross, "should in no instance extend entirely through the lateral lobe of the prostate gland, on account of the danger of urinary infiltration."

The late Mr. Martineau, who was one of the most successful lithotomists that ever operated, is supposed by some to have advocated free incisions, while others claim him as a partisan of dilatation. The fact, however, is, that Mr. Martineau followed a method peculiar to himself. His first incision was made nearly in the line of the raphé, while his second incision was a double one; he first carried his knife forwards into the bladder in the usual way, and on withdrawing the knife, he made another incision nearly horizontal, towards the ischium. Mr. Martineau does not appear to have divided the capsule of the gland, and it is certain that he employed dilatation with his finger.

Long before the celebrated memoir of Scarpa appeared, Deschamps had examined this disputed question of free and moderate incisions, and resolved it in the manner conformable to the practice of the best operators at the present day. Deschamps insists on the prudence of our never passing beyond the limits of the prostate.

When the stone is more than twenty lines in diameter, the whole thickness of the prostate must be cut, or other methods employed; but for all calculi below twenty lines, Deschamps shows that an incision of eight lines, or three quarters of an inch, is quite sufficient. This is exactly the opinion of the late Mr. Liston, who was a very successful operator for stone. "The internal incision (says Mr. Liston in his 'Practical Surgery') should certainly not extend beyond seven lines from the urethra outwards and downwards; the less that is cut the greater will be the patient's safety." With proper dilatation, according to Mr. Liston, a stone of from three to nearly five inches in circumference in one direction, and from four to six in the largest, may be thus removed. When the stone is larger, other means must be had recourse to; but these I shall examine under the head of obstacles.

The external and internal incisions are now supposed to be completed, and I shall say nothing more respecting them, except that they should be made as exactly as possible in the same plane—that is to say, the internal incision should look obliquely downwards and outwards in the same direction as the external wound.

As a sufficient opening has now been made into the bladder, our next business is to introduce the forceps and extract the stone. This is sometimes a difficult, but always a very delicate part of the operation, for the dilatation of which I have spoken is usually made during the process of extraction.

As the depth of the perineum varies in different patients, and the calculus may occupy different sites in the bladder, being sometimes hooked above the pubes, it is necessary that the surgeon should be provided with forceps of various lengths and shapes. Here is the one commonly used. It was formerly the custom to pass up a blunt gorget into the bladder, and direct the forceps along its concavity; but we now find the left index-finger sufficient to guide them, and we thus get rid of an instrument. You pass, then, your left index-finger into the bladder, and along it you direct the forceps. If the internal incision be not quite free enough, it may be dilated with the finger, according to Mr. Martineau's practice; at all events the forceps will effect a certain degree of dilatation in passing through the prostate and neck of the bladder, but great care must be taken not to employ any violence during this step. If you proceed a little more slowly, the chances of ultimate success increase in proportion; and after all, the saving our patient's life is the main object which we should look to. In many cases the index-finger can touch the stone, and will, therefore, guide the forceps at once on it. In others you must use the forceps as a sound, directing it in the first instance to that part of the bladder where the stone most probably lies —that is, to the bas-fond beyond the prostate.

Having firmly seized the calculus between the blades of the forceps, you proceed to its extraction. Here the important question of dilatation again presents itself. The internal incision is not large enough *per se* to admit of the passage of a moderate sized stone. The wound in the prostate gland and the neck of the bladder must therefore be dilated to a certain degree, and this dilatation moreover must be effected with a certain rapidity, for you cannot, or rather ought not, to keep your patient too long on the table. The tact and experience of the operator must here direct him; still any violent tearing of the parts must be scrupulously avoided, for the results would be inevitably fatal. It is here that the advantage of lithotrity is chiefly seen. The lithotomist has never more than vague notions of the size of the stone which he is to extract; yet the extent of his internal incision and the degree of force he is to employ during extraction—that is to say, the two most important points of his operation—must be guided by an element which is imperfectly known to him. It has occurred to me often that the operation would gain much if the surgeon were previously to measure the volume of the calculus with some convenient instrument; and I perceive by a report in the 'Lancet,' that Mr. Bransby Cooper once had recourse to this plan in a doubtful case. Whenever the calculus is of a flat shape, the operator must endeavour to seize it by its smallest diameter; and if it seems to stick in the neck of the bladder, he must let it go, and endeavour to re-seize it in a more favourable manner. This done, he withdraws the forceps slowly in the direction of the external wound, dilating the parts gradually, and bringing the instrument towards the lower handle of the external wound in a sweeping direction.

The various obstacles which may be encountered during the extraction of the stone will be explained at another time.

When the calculus is small, it often escapes from the blades of the forceps. In such cases, I have recourse to the scoop; but this is seldom necessary, unless the stone should happen to break into fragments; and hence, whenever the calculus is of the phosphatic kind, you must be careful not to grasp it too firmly with the forceps, for fear of crushing it, and performing perineal lithotrity against your intention.

When the stone has been extracted, the bladder must be carefully examined for any other urinary concretion; for this purpose, a peculiar kind of sound, called a searcher, may be employed with advantage.

I have thus described to you the lateral operation as it is performed in this country at the present day. The modern French operation is somewhat different. It is a modification of that invented by Frère Come, and is performed with a peculiar instrument called the lithotome caché. The patient is placed in the same position as with us, but the hands are not bound to the feet. The mode of performing the external incisions, and of opening the urethra, is also the same; but the urethra is opened just behind the bulb; the lithotome caché is now introduced, and its point fixed in the groove of the staff; it is then passed along the groove into the bladder with the blades closed. When the surgeon conceives that he has passed it sufficiently in, he opens the blades to an extent proportioned to the incision he intends making, and in withdrawing the instrument, he divides the neck of the bladder and prostate in an oblique direction downwards and outwards.

Baron Boyer preferred this instrument to all others, but he employed it in a somewhat different manner. His incision was generally a moderate one, and he preferred dilating it with his finger, or even enlarging it with a second incision, to the risk of cutting too freely. He directed the blade nearly horizontally, and cut towards the ischium until the absence of resistance told him that the prostate was divided across. He then introduced his finger, and dilated the incision downwards, so as to give it somewhat the direction of the external wound.

I should observe that many modern French surgeons employ the blunt-pointed bistoury exactly in the same way we do, but they seem to make their internal incision more freely than we.

[For the extraction of stone, next of the difficulties likely to be met with in performing the operation, consists of four parts, viz.—the introduction of a grooved staff; the external incisions; the internal one; and the extraction of the calculus.]

The introduction of a grooved staff into the bladder, through the urethra, being one of the conditions or parts of the lateral operation, anything which impedes this step is an obstacle; but I shall not dwell on this circumstance, as it has been already noticed in my lectures on lithotrity. I shall only remark, that in cases where the calculus is impacted in the neck of the bladder, and cannot be pushed back into the cavity of that organ, it is evidently impossible to introduce the staff, and another method must be had recourse to.

When the patient can be placed in the usual position, and the perineum is not deformed by tumours, fistulæ, &c., or any irregularity in the bony structures, the operator experiences no difficulty in making the first incisions in a proper manner. On arriving at the membranous portion of the urethra, the point of the knife is generally guided to the groove of the staff without any difficulty; but care must be taken, while we make the opening into this part, not to wound the rectum, which lies close upon it. Hence many operators advise us to open the membranous portion of the urethra from behind forwards; but this precaution has not been found necessary in the practice of English surgeons.

When the internal incision is effected by the same instrument which was employed for the external incisions, there can of course exist no difficulty in hitting upon the small opening made into the membranous portion of the urethra, since the point of the knife has never quitted the groove of the staff. But in this mode of operating there is always some difficulty in making the point of the knife glide regularly and easily along the groove into the bladder. In the hands even of experienced operators, it has happened that the groove of the staff has been missed, or the knife has slipped out of the groove, making the incision irregularly, and to one side, in a dangerous manner. Moreau, Frère Come, Scarpa, and many other writers on lithotomy, mention examples of this accident. On the other hand, when the beaked knife is substituted for the pointed one, there may be some little difficulty in hitting upon the exact point of the urethra, which you have already opened. This, however is seldom any obstacle, and may be obviated by keeping the nail of the left forefinger well in contact with the groove of the staff, which the assistant takes care to hold perfectly steady.

From what I have now said, you may perceive that there is little or no difficulty in making your way into the bladder; the great difficulty occurs in getting the stone out of that organ, and a great variety of obstacles may impede this important part of the operation. Let us examine them in succession. They may arise from certain conditions of the parts, or depend on the nature, position, and size of the calculus.

The foreign body, as I have said in a former lecture, is extracted with a particular kind of forceps, which we pass along the finger through the external and internal incisions, expand in the cavity of the bladder, close over the stone, and then withdraw in the direction of the external wound.

During each of these steps the operator may encounter unexpected obstacles. In the first place, I may observe that the best operators have occasionally found it difficult to seize the stone, although no impediment could be discovered. Mr. Crosse relates a case in which three-quarters of an hour were spent in efforts to seize a stone not larger than a pigeon's egg.

Generally speaking, however, the nature of the obstacle is sufficiently obvious. The first one to which I shall direct your attention is unusual depth of the perineum, occurring in fat persons. Here the distance from the external surface of the perineum to the cavity of the bladder is greatly increased; the operator is deprived of the great advantage arising from his being able to examine the interior of the bladder with his finger, and the young operator may be led astray, imagining that the forceps has gained the vesical cavity when it has hardly reached its entrance.

This commonly occurs in old and fat persons; but the same effect, though from a totally different cause, may be observed in the young subject. In children, from the great extensibility of parts, and other circumstances which I cannot now notice, the bladder is very apt to yield before the knife; and when the incisions have been made, the bladder has also a tendency to recede before the finger. This receding of the organ upwards produces the same effect as if the perineum were deep, and may become, though not in so great a degree, an obstacle to the easy extraction of the calculus. On the other hand, the neck of the bladder is often thick and unyielding in old persons, offering great impediment to the introduction of the forceps, and a still greater obstacle to their withdrawal. Spasmodic contraction about the neck of the bladder may give rise to the same results; indeed, Deschamps relates an interesting case, where spasmodic contraction rendered it impossible to pass even a catheter into the bladder through the internal incision, which had been freely made with a lithotome caché.

Enlargement of the prostate presents a greater or less obstacle to the easy performance of lithotomy, as well as lithotrity. A moderate degree of enlargement may not embarrass the operator; but when this gland is considerably increased in size, it is always a cause of difficulty and annoyance. Anything approaching scirrhous induration will of course impede the action of the cutting instrument; and the lithotome caché has been broken in attempts to cut through indurated prostates. But the great obstacle which considerable enlargement of the prostate causes, is to seizing the stone. It places the calculus beyond the reach of the finger, and a sure guide to the position of the foreign body in the bladder is thus lost; while the distance of the vesical cavity from the external surface is greatly increased. Besides this, the enlarged gland raising up with it the neck of the bladder, leaves behind it a depression or artificial cavity, in which the stone becomes lodged, and easily escapes being detected by the sound, or seized with the forceps. The instrument slides over the calculus, and the only way of overcoming the difficulty is to employ a very long curved forceps, while, with the finger introduced into the rectum, we endeavour to raise up the stone from the depression behind the prostate in which it is lodged. But enlargement of the middle lobe, if carried to any excess, renders this latter proceeding generally impossible. The finger cannot reach beyond the enlarged lobe.

Several morbid conditions of the bladder itself may impede the operator in his attempts to seize the stone. These I fully described in my lecture on the 'Pathological Effects of Vesical Calculi,' and they readily explain the difficulties which are experienced. Thus I told you how, in old cases of vesical calculi, the bladder was often hypertrophied, and at the same time contracted firmly, embracing the stone, or leaving but a small interval between the foreign body and the walls of the containing cavity. The bladder also, in cases of this kind, is often extremely irritable. This condition of the bladder is a source of great embarrassment during the extraction of the stone. When the bladder is closely applied on the surface of a large calculus, it will require all the dexterity and patience of an experienced operator to pass the blades of the forceps between the bladder and calculus, without injuring or severely irritating the former; the operation thus becomes protracted, and its dangers proportionately increased. Mr. Samuel Cooper, and many other systematic writers, advise us, under such circumstances, to suspend our efforts for a short time, and wait until the contractions of the bladder have become less violent. This, perhaps, is more prudent than to go on irritating a diseased bladder with useless efforts; yet it is always a most undesirable thing to suspend such an operation as that of lithotomy.

In some calculous patients the mucous coat of the bladder is relaxed and thrown into folds, behind one of which the calculus, if small, may be concealed, and escape the forceps. Here, recourse may be had to the scoop, or the stone may perhaps be dislodged from its position by slowly expanding the blades of a broad forceps in a horizontal direction.

It more often happens, however, that a small calculus gets entangled between the meshes of a columnar bladder, and quite eludes your efforts to seize it with the forceps. Here, unless you can succeed in dislodging the stone from its position, either with the finger, the scoop, or some analogous instrument, I cannot see what is to be done. If you attempt to extract the foreign body without regard to the position which it occupies, you must inevitably lacerate the coats of the bladder. The position of the calculus in a regular sac or cyst formed by the mucous coat which has been forced outwards between the muscular fibres, is a still greater obstacle, and one, in my judgment, that is all but insurmountable.

Cases of encysted calculi are fortunately very rare; but when they do occur, they present one of the most embarrassing conditions with which the lithotomist can have to deal. Remember that the stone is more or less concealed in a sac, the entrance into which may be much narrower than the fundus. Could it be ascertained with any certainty before an operation has been undertaken, that the stone is actually lodged in one of these sacs, I am decidedly of opinion that lithotomy should not be had recourse to, because it is ten to one that the operation will turn out to have been useless; but when an opening has been made into the bladder, the surgeon is extremely unwilling to remove the patient from the operating table without having made every effort to complete the work which he has begun.

Let us consider, then, the various ways in which operators have endeavoured to overcome the difficulty of encysted calculi. Two main points are to be borne in mind. The stone may be completely encysted, and the entrance into the sac may be narrow, or its orifice may be wide, and a portion of the stone project into the bladder. When the stone is completely encysted, I am decidedly of opinion that no attempt should be made to dislodge it by incision of the neck of the sac. The operation of lithotomy must be left unfinished. However disagreeable this may be to the surgeon, it is better than to hasten the patient's death by attempts which almost invariably prove fatal.

On the other hand, when the calculus is only partially contained in the cyst, and the orifice of the latter does not embrace it tightly, an attempt may be made to complete the operation. Various expedients have been resorted to by different surgeons. In one case Collot succeeded in dislodging the stone by changing the position of his patient;

but this must be regarded as a lucky chance on which others cannot count. In another case where the orifice of the cyst was wide, Moreau succeeded in grasping and dislodging the stone with the forceps. The best practice is to endeavour to dislodge the calculus with the finger; but unless the cyst be seated near the neck of the bladder, the finger does not penetrate far enough to be of much use. A long probe or other blunt instrument, may be substituted for it, and careful efforts made to enlarge the orifice of the cyst. In one case, Sir B. Brodie succeeded in dilating the neck of the sac with a probe-pointed bistoury; after which he separated the calculus from the cyst with his finger, and was fortunate enough to be able to grasp the stone with a forceps. Other surgeons recommend us to divide the neck of the sac with a bistoury, or with the lithotome caché, but I need hardly say that so dangerous a proceeding should never be employed unless the finger can be made to guide the cutting instrument; and if the finger can reach the cyst, I should much prefer dilating its orifice, if practicable, to cutting it.

Desault invented a peculiar kind of knife, something like a pharyngotome, for this operation; but he can cite only a single case of success; and Deschamps also met but one case of sacculated stone in his extensive practice. The stone was only partly engaged in the sac, and was extracted with the forceps, though with considerable difficulty. After many failures, Deschamps contrived to seize the projecting part of the stone, and to disengage it from the cyst by gentle rotation with the forceps.

If you trust what you will find in books relative to encysted calculi, the operative proceeding seems easy and simple. Thus, to quote a standard work, we are told—"When there is reason to believe that the stone is encysted, it is advisable to introduce the finger into the bladder, and to rupture the cyst with the nail; or when this is impracticable on account of its great strength and thickness, to divide it with a probe-pointed bistoury, or a knife fashioned like a gum lancet, and furnished with a long handle."

Such an off-hand way of describing one of the most delicate proceedings in surgery is well calculated to mislead the young practitioner. It is easy enough to say, divide the neck of the sac with a knife, but the difficulty is to do so without danger; and I have little hesitation in affirming that it would be a most hazardous proceeding to divide the tissues of the bladder at any point which is beyond the reach of the finger; and the latter can seldom penetrate more than half an inch beyond the neck of the bladder in the adult. What I now say applies to the lateral operation.

An irregular position of the stone in the bladder may cause some difficulty in seizing it, and thus protract the operation. The natural position, if I may use the term, is in the most depending part of the floor of the bladder, behind the prostate. In some cases, however, the calculus has been found suspended, or hooked as it were above the prostate and behind the symphysis pubis. Pressure on the abdomen, just above the pubes, may perhaps dislodge it; if not, an effort must be made with a forceps strongly curved. In other cases—but these also are extremely rare—the stone appears to be retained in an anomalous position, by some irregular action of the muscular fibres of the bladder, analogous to the hour-glass contraction of the uterus. A case of this kind occurring during the lateral operation, would be the cause of almost insurmountable difficulty. The action of the finger or knife is here out of the question; and, even if the nature of the case were understood, the efforts to pass the blades of the forceps between the stone and contracted cavity must be extremely injurious. Perhaps the only thing left under such untoward circumstances is the high operation.

The numbers, form, size, and physical nature of the calculi may very much influence the proceedings necessary for their extraction, and render this part of the operation difficult or protracted.

When due care is exercised, the circumstance that more than one calculus is present in the bladder can seldom have any other unfavourable effect than that of prolonging the operation. A tolerably healthy bladder bears the contact of instruments well, provided no violence be used. The number of calculi which have been sometimes extracted from the bladder, by the lateral operation, is surprising; but we must remember that in such cases the calculi are usually small in proportion to their number. As many as 200 of these small calculi have been removed by M. Roux and Dupuytren. My friend, Professor Eve, of the United States, removed 117 calculi by the lateral operation, about three years ago, and the patient did well. The case of a woman whose bladder contained 214 is recorded in the Philosophical Transactions; and even a still greater number has been discovered in the bladder after death.

It is difficult to form any exact estimate of the proportion of cases in which a number of calculi may exist, but it is certain that in a vast majority, I might say ten times to one, the calculus is single. In twenty-seven cases the late Mr. Liston met with seven in which more than one calculus existed; M. Klein, the celebrated German lithotomist, met with twelve cases (two to six calculi) in seventy-nine operations of lithotomy. We are indebted, however, for the best table which we possess to the late Mr. Crosse, of Norwich, who gives a list of 100 fatal cases, in eighty-four of which the calculi were single; in seven, two calculi were found; in six, three; in two, four calculi; and in only one, five. A month ago, I extracted four calculi from a patient. Two of these were round and large, measuring more than an inch and a quarter in the smallest diameter. The other two calculi presented at one part flattened surfaces, as if a portion of the sphere had been cut off. They weighed three ounces and a half. This case did extremely well; and I may here notice, that the sensation communicated by the sound passing over the four calculi, led me to believe that I had to deal with a single large one. A number of small calculi may be extracted with the forceps; but when the foreign bodies are very small and numerous, the scoop seems the better instrument. It has often been said that the roughness of the stone, on its surface, is a sure sign that the bladder contains no other calculi; this, however, is an error which Deschamps pointed out long ago. The first stone extracted may present no sign whatever of the effects of friction, yet the bladder may contain several calculi. Hence the practical rule never to remove your patient until you have convinced yourself, by careful examination, that no other foreign bodies are left behind in the bladder.

When the stone is single, and at the same time small, the operator may experience some difficulty in grasping it with the forceps, on account of the smallness of the body which he seeks to lay hold of, or, when seized, it may easily escape from the forceps. Many operators are in the habit of having recourse to the scoop under such circumstances; for my own part I prefer employing the forceps whenever it is possible: it is not easy to find a very small calculus with the scoop, and repeated scraping of the bladder is apt to excite great irritation, if not inflammation of the organ.

The shape of the stone may occasionally be an obstacle to its easy extraction. The commonest form of vesical culculi is the oval, but sometimes they are more or less flattened; thus, one of the calculi extracted by Vacca, was two inches long, one inch and two-thirds broad, and not half an inch thick. M. Civiale has seen calculi almost as flat as a crown piece, and our own museums contain many specimens of the same kind. Now you can easily understand that there may be some difficulty in laying hold of a flat stone with the forceps: but the great obstacle to its extraction is when it has unfortunately been seized by one of its large diameters. There is a great difference between extracting a body which measures two inches, and a body which measures only half an inch, through the same wound of the prostate. You, must, then, always bear in mind the possibility of your having seized an irregularly-shaped stone by one of its long diameters; and hence, whenever you find any difficulty in extracting the stone, your very first care must be to let go the calculus without withdrawing the forceps from the bladder, and endeavour to seize the stone in a more favourable manner. This, I say, must be done before you think of enlarging the internal wound, of breaking up the foreign body, or having recourse to another mode of extraction. It may be that the calculus is really a large one, and that it has been seized in the best way; but give your patient the benefit of the doubt, and before you push dilatation as far as it can go, see if nothing is to be gained by a change of position. On the other hand you are not to let go the stone without sufficient reason, and because of slight resistance to extraction. A great point is always gained when the calculus is once within the grasp of the forceps, and it may not be so easy to catch it the next time you try. Whenever the finger can be made to penetrate sufficiently far into the bladder, it will be of great assistance in determining the shape of the stone, and in placing the latter in a more favourable manner between the blades of the forceps.

Although fracture of the calculus during extraction belongs more properly to accidents, it may be conveniently noticed here, for it likewise presents an obstacle to the rapid completion of the operation. It is a curious fact, that the fracture of the stone may be spontaneous, or, at all events, may occur some time anterior to the operation.

Mr. Crosse has published a case placing this fact beyond doubt. In the bladder of a man seventy years of age, Mr. Crosse found twenty-two calculi, weighing three ounces and a half. These calculi, however, were evidently fragments, and could be put together so as to form three different bodies, one comprising five fragments, a second eight, and the last nine fragments. The primitive calculi were about the size of a pigeon's egg, and composed of uric acid with a small proportion of oxalate of lime. M. Civiale endeavours to explain spontaneous fracture of calculi by the violent contractions of an hypertrophied bladder. It would seem that rough exercise on horseback has also been a determining cause of the fracture; while the admirers of mineral waters will not fail to attribute the disintegration which sometimes occurs during their use to the solvent virtues of the spring. However this may be, we find that calculi may spontaneously break up in the bladder, or be fractured by the forceps; and in either case the operation of extraction is necessarily prolonged; in the latter, indeed, the lithotomist has performed a kind of lithotrity, without intending it.

The surgeon should always endeavour to extract the calculus entire, for two reasons especially. The first is, that a single calculus is more quickly extracted than a number of fragments; and however writers may insist on the necessity of caution, prudence &c., it is no less certain that to perform lithotomy well, it must be performed in the shortest space of time compatible with the safety of the patient. The use of chloroform may perhaps render it less necessary than formerly for the operator to be a quick one; but even with the aid of this valuable agent, I believe that the old rule holds good—the shorter your patient is under the knife the better. I do not say that you are to sacrifice safety to brilliancy, but that the acme of perfection in the lithotomist is to do his work safely, and at the same time rapidly. The second reason for avoiding fracture of the calculus is, the possibility of relapse from retention of some fragment in the bladder. After lithotrity, you have the natural passages open for the discharge of detritus; but after lithotomy, we cannot keep the external wound open too long without inconvenience and danger.

The chemical nature of the stone will of course mainly influence its tendency to give way under the pressure of the forceps. Hence it is of much importance to ascertain beforehand, as nearly as possible, the composition of the calculus which you are about to extract. Uric-acid concretions are the hardest, and the ringing sound which they emit, when struck, often suffices to indicate their nature. On the other hand, the triple phosphate is easily broken; but the most fragile of all is the fusible calculus, which sometimes crumbles into fragments on the slightest pressure. It is necessary to bear these points in mind, for when you know that the calculus is friable, you will of course be more careful during its extraction. The forceps employed should be broad-bladed, with the teeth not very long, and the stone must be seized as lightly as possible, care being taken not to increase the pressure as the forceps are being withdrawn through the neck of the bladder and prostate, where the greatest resistance is usually experienced.

In spite of our caution, the calculus, however, may give way, and either throw off several fragments or even break up into a mass resembling mortar. This is an unfavourable accident, for it compels us to introduce instruments frequently into the bladder, and the irritation thus produced has excited such violent contraction of the organ as to render it impossible to finish the operation. When it does occur, any large fragments must be extracted with the forceps, and the smaller ones with the scoop; some will inevitably remain behind, and, to remove these, injections with tepid water are to be employed and repeated before the wound in the perineum closes.

I once had a case in which more than an hour was employed in removing with a scoop, the matter of a fusible calculus; still a considerable portion remained, and as I was unwilling to protract the operation any longer, I had the patient removed to bed. At the end of a fortnight I introduced a large catheter through the urethra, and washed out the bladder thoroughly; this brought away a good deal of the friable matter through the wound in the perineum. The same process was repeated every second day until no more calculous matter came away—that is, for about a fortnight. The patient recovered, and has had no relapse.

When the prostate is much enlarged, this plan may not succeed, as the fluid thrown in by the urethra does not find a ready exit through the incision in the neck of the bladder. In cases of this kind, the best practice is to employ the large-eyed catheter, and wash out the bladder in the way I have already described when speaking of the removal of detritus after lithotrity.—*Lancet, July* 10, 1852, *p.* 26; *July* 31, *p.* 93; *Oct.* 23, *p.* 368; *and Nov.* 6, *p.* 413.

99.—CASE OF EXTRACTION OF LARGE CALCULUS.—BILATERAL OPERATION WITH THE DOUBLE LITHOTOME OF DUPUYTREN.

By Dr. John Fred. May, Professor of Surgery in the National Medical College, Washington, U. S.

George H., aged 18, entered the Washington Infirmary for stone in the bladder. He has for many years been labouring under all the symptoms of stone, but has never been sounded for it. He is unable to pass his urine except by placing himself horizontally across a chair. On sounding him, a few days after his entrance, a calculus was at once detected, and, from several subsequent examinations, I believed the stone to be so large that I did not deem his case a favourable one for lithotrity. I therefore decided to cut him, and, on the 15th of April, performed the bilateral section before the medical class in the following way:—

The patient having been etherized and placed in the usual position, a deeply-grooved staff was introduced into the bladder, and pressed firmly against the perineum, as near as possible in the median line. A crescentic incision was then made over the staff, which, commencing on the right side at a point equidistant from the anus and the tuberosity of the ischium, was terminated at a similar point on the opposite side, the centre of the curve being three-fourths of an inch above the anus. The incision was, by a few strokes of the scalpel, deepened, the fascia and perineal muscles divided, and the membranous portion of the urethra exposed, which was then opened upon the groove of the staff longitudinally, and to a sufficient degree to admit the beak of the double lithotome of Dupuytren, which, being fairly placed in the groove, was introduced upon it into the bladder. The stone being felt with the end of the lithotome, the staff was extracted, and the instrument being reversed, the blades were sprung to No. 18 on the graduated scale, and it was withdrawn from the bladder, thus dividing the prostate equally, on both sides nine lines.

The calculus was then readily seized with the forceps, but, finding that from its size it would not pass through the incision that had been made in the prostate, the forceps were extracted, the lithotome again introduced, and the gland further divided by the blades being sprung to their maximum point of twenty-one lines. The stone was then seized with curved forceps, and extracted entire with not more than the usual force required in the extraction of a calculus of medium size by the lateral operation.

The following were its dimensions: Longest diameter, *two inches within a fraction;* shortest diameter, *one and five-eighths of an inch;* circumference, *five and five-eighths inches.* It was hard, being a triple phosphate, and round. The patient recovered from the operation in about the usual time, and, being sufficiently strong to travel, left for his home in Virginia in about two months after the operation was performed.

I have given the details of this operation, because I think it tends to sustain the superiority of the bilateral section for the extraction of large calculi; for I am convinced that the stone in this case could not have been extracted by the lateral operation without prolonging the incision further beyond the limits of the prostate and upon the neck of the bladder than would have been safe for the patient. For a stone less in size, I have seen the high operation resorted to in the wards of Civiale.

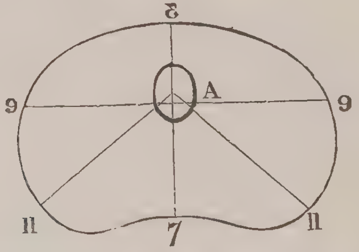
Within the last twelve years, the bilateral section for the stone has attracted a good deal of attention from American surgeons, and I believe some of the most distinguished, after having fairly tested it, are its advocates at the present time. Its great merit, which I have already alluded to, that it permits the extraction of large calculi with greater facility and with less danger than any other method of perineal lithotomy, I think few can doubt, when they consider attentively the anatomy and dimensions of the parts which are concerned in the operation for the stone.

I believe it is generally admitted, at the present day, that one of the great points of safety in perineal lithotomy is the avoidance of injury to the middle perineal fascia, or that layer which is reflected from the prostate gland upon the rectum, and hence that it is most desirable not to incise beyond the limits of the gland. The division of this fascia beyond the gland unquestionably favours urinary extravasation, and, consequently, its frequent attendant of sloughing abscesses between the bladder and rectum. Scarpa, indeed, was so thoroughly convinced of the importance of not injuring the prostatic fascia, that he thought the limits of the gland ought never to be passed with the knife, and that a calculus of more than sixteen lines ought never to be extracted by the perineum entire. It is true that others, disregarding the gland, have advised the free incision of the neck of the bladder when necessary; but, although this free incision may be necessary in the lateral operation, if the calculus is large, I presume that even its advocates will hardly contend that it is equally safe. No one, I think, can do so who properly appreciates the value of fascial expansions in warding off and thus protecting parts which lie beyond them from the well-known effects of extravasated fluids and secretions. Velpeau, in his remarks on lithotomy in his great work on operative surgery, supervised by Professor Mott, in alluding to this point, observes:—

"Delpéch also thinks that there is less danger in dilating, or even lacerating, the neck of the bladder than in incising it extensively, and that in this respect Lecat's rule ought to be retained as a law. There is under this precept an important truth, which could not be perfectly appreciated until in these latter times, because the anatomical fact connected with it had not been clearly indicated. It is this: *That lithotomy, confined within the limits of the prostate, is infinitely less dangerous than in that in which the incisions are extended beyond this gland.*"

If it is, then, true that it is all-important, for the reasons that have been mentioned, not to incise beyond the borders of the prostate gland, the superiority and safety of the bilateral section is apparent.

The following diagram of the several diameters of the prostate, from the urethra as the starting-point, will at once show the difference in the extent of the incisions through the gland made in the lateral and bilateral methods.



The measurement is that of M. Senn, of Geneva, and gives the average size of the gland in a healthy state in the adult. In old men and children there is, of course, a considerable variation from it. The anterior face of the gland is considered.

It will thus be seen that, from the urethra A to the periphery of the gland, the dimensions are as follows: Transverse diameter nine lines; oblique diameter ten to eleven lines; inferior vertical diameter seven lines; superior vertical diameter three lines. The oblique diameter, the greatest, is the one divided in the lateral operation. This is eleven lines, or one line less than an inch. Add to this the dimensions of the urethra, about four lines, and this section will give us but fifteen lines. Now, it is very certain that a calculus of over sixteen lines in its shortest diameter could scarcely be extracted through this opening without either tearing or incising beyond the limits of the gland, for although something must be allowed for the stretching and yielding of the parts, yet this is fully counterbalanced by the increased volume which the blades of the forceps would add in grasping the stone. The surgeon, therefore, is obliged either to tear the parts by main force, or to incise them freely beyond the prostate.

Now, in the bilateral division of the gland in which both the oblique diameters are incised, we have, allowing four lines for the urethra, a section of twenty-six lines; and if to this we allow for the stretching of the curve, approaching as it does towards a straight line during the passage of the calculus, it is evident that it will permit, without great difficulty, the passage of a stone of two inches in its short diameter, leaving, at the same time, intact the parts beyond the gland. None of the methods of perineal lithotomy can, therefore, in its *free* and *safe* incision, be compared with the bilateral operation, permitting, as it does, the passage of a calculus of two inches in diameter and six inches in circumference without causing any laceration.

In speaking of this operation, Velpeau remarks that "a calculus of twenty to twenty-four lines in thickness, and from five to six inches in circumference might, *strictly* speaking, pass through the opening without causing any laceration." If the stone be larger than this, it had better either be broken, if possible, through the wound, or extracted by the high operation. There are surgeons who prefer performing the bilateral section with a common scalpel, for the purpose of simplifying the operation, and from the belief also that the incision through the gland does not correspond to the expansion given to the blades of the lithotome, from the yielding of the latter on account of their length and slenderness. I do not think the last objection to be correct. If the instrument is made properly, and the blades are well and firmly articulated and sharp, I have not been able to discover any such defect. The operation can, no doubt, be very well performed with the common scalpel or bistoury, and if the lithotome of Dupuytren did not possess positive advantages over it, it ought to be preferred upon the ground of being the more simple instrument. But the lithotome, as Velpeau remarks, renders the parts more tense as it divides them, gives greater regularity to the wound, terminates the operation with a single cut, and especially makes "an actual curved, instead of a simple V incision, which latter is the only one which can reasonably be expected, if we use the bistoury or other lithotomes." It is an instrument, moreover, that can be safely used at all ages, as the blades can be sprung by the graduated scale on the handle from four to ten and a half lines on each side. I first used the double lithotome in 1842, and then on a child of three and a half years. The blades were set to four lines each, thus making an incision of eight lines through the prostate, and through this, with a pair of ordinary polypus forceps, I extracted a calculus one inch in its long, and five-eighths of an inch in its short diameter (about as large as a common-sized almond in the shell) without the wound being even stretched by its passage. The child did not lose over ℥i of blood, and the recovery was very rapid, the wound being nearly closed in two weeks after the operation was performed; a fact which goes far to disprove the assertion made by some, that cicatrization is much slower after the bilateral than the lateral section.

There are, moreover, other reasons, besides those already mentioned, which, it appears to me, render this operation safer in many respects than the lateral method, and which I, therefore, think should cause it to be adopted, not only specially, for the removal of small calculi, but also as a general method.

In the first place, there are fewer vessels divided by it, and the bulb of the urethra is not touched, for the incision is made between the anus and the bulb, and the latter with its transvere artery can be always avoided. In the lateral operation, from the position and extent of the incision, I do not see how the bulb and artery can well escape, notwithstanding the directions in the books. Without attaching to their division great importance, it is yet undoubtedly preferable to avoid them when it can be done. If the double lithotome is used, the pudic artery cannot by any possibility, except anomalous distribution, be reached. Even the superficial artery, when in its usual position, is not usually divided; so that the operator is incomparably less incommoded by hemorrhage, as the posterior branches of the transverse, and the anterior twigs of the hemorrhoidal artery are really the only arteries that are usually divided. Again, as the lithotome cuts *outwards* and backwards, there is less danger to the rectum. Indeed, I do not see how the intestine can be injured, unless it should be greatly distended from neglect, prior to the operation; and, lastly, the ejaculatory ducts and vesiculæ seminales are not exposed to risk, for it will be recollected that the membranous portion of the urethra is first opened, and then the blades of the lithotome are sprung. Their obliquity *outwards*, from this point, is such that the ducts cannot be injured, while, the blades not passing the limits of the prostate, the vesiculæ cannot be reached.—*American Journal of Med. Science, April* 1852, *p.* 407.

100.—ON CALCULI IN THE FEMALE BLADDER.

By JOHN ADAMS, Esq., Surgeon to the London Hospital.

Experience appears to show, that the removal of a calculus from the female bladder, after the neck of the latter and the canal of the urethra have been gradually dilated by forceps constructed for the purpose, sponge tents or otherwise, is a preferable proceeding to its removal after the urethra has been incised. It also demonstrates, that dilatation can be carried on to an extent which, in the absence of well-authenticated facts, would appear almost incredible. The most remarkable case among those recorded with which I am acquainted, is one related in the first volume of the 'Medico-Chirurgical Transactions.' It occurred in the practice of Mr. Okes, of Cambridge. The patient was eleven years old. Sponge tents, gradually increased in size, with string attached, were introduced into the urethra, opium, preceded by purging, being administered. The sponge was used morning and evening, for three successive days. The urethra was sufficiently dilated, on the third day, to allow of the calculus being withdrawn. It is stated, that the stone measured in circumference, at its major axis, $3\frac{3}{8}$ inches; in its minor, $3\frac{1}{8}$ inches. The calculus was seized in its long axis, and therefore the urethra must have been distended by the calculus and the thickness of the forceps to a circle of at least $3\frac{3}{4}$. Incontinence of urine lasted only three days.

This plan of treatment by dilatation is in imitation of that made use of in the natural efforts to get rid of a calculus from the female bladder, the stone itself acting as the dilating power; and numerous remarkable instances are on record of calculi thus voided, without any subsequent incontinence of urine. In far the greater number of cases, however, in which the calculi have been large, incontinence of urine, which was a marked antecedent symptom, has persisted; this, probably, arising from ulceration at the neck of the bladder, in consequence of the pressure of the foreign body. Thus, there is in the London Hospital Museum a calculus which was removed from a woman by the late Mr. Headington. Its anterior extremity was found sticking in the urethra, and the entire stone was removed easily by traction of the two index fingers. It measured $3\frac{1}{8}$ inches long, 2 inches broad, $1\frac{7}{8}$ inch thick, $7\frac{3}{4}$ inches round its larger, and $5\frac{1}{2}$ inches in its smaller circumference. Incontinence of urine lasted till death. The fact of incapability of retaining the urine usually following the natural method of expulsion, when the calculus has been large, suggests the propriety of operating without any unnecessary delay, in order to avoid this inconvenient and distressing sequence.

[Mr. Adams relates three interesting cases, and then proceeds to say:]

In the treatment of the first case, it was contemplated to remove the calculus entire, but, as the urethra had given way slightly at its lower and anterior part after the last dilatation, it was deemed prudent to desist from further extension of the canal; and to crush the stone and remove it piecemeal, which was easily effected at different operations. It might have been surmised, that the presence of the fragments in the bladder would have given rise to such an amount of irritation as to call for their removal at one operation. This was not found to be the case; and it was considered that the aggregate amount of irritation was not so great as would in all probability have taken place had all the fragments been taken away at one operation—a proceeding which would have involved much time, and in which, from the frequent application of the instrument for extraction, an amount of injury might have been induced, which would not, in all probability, have been well tolerated.

In no case did the chloroform appear of more eminent service; for, without this agent, the pain induced, and the restlessness of the patient in consequence, would have rendered the process of dilatation, and the subsequent operations for extracting the fragments, much more difficult than they were found to be.

The second case is interesting, inasmuch as the operation for removal of the calculus consisted partly of dilatation of the urethra, and partly of incision. In consequence of dilatation having been had recourse to in the first instance, the incision subsequently practised was but slight and limited in extent, and incontinence of urine continued only a few days.

In the third case, the symptoms were of that aggravated character, both locally and constitutionally, that it was considered imprudent to wait during the time requisite for the gradual dilatation of the urethra; and an incision of that canal was made. This incision was as limited in extent as possible, the stone having been previously brought to the neck of the bladder, and the latter having been rendered tense prior to the incision of it and of the urethra,—*Med. Times and Gazette, July 17, 1852, p.* 67.

101.—ON PUNCTURING THE BLADDER THROUGH THE RECTUM FOR COMPLETE RETENTION OF URINE.

By JOHN HILTON, Esq., F.R.S., Surgeon to Guy's Hospital.

[Mr. Hilton examines this subject the more carefully on account of the opprobrium which has been cast upon it by many surgeons. He relates the following case.

G. H.., 66 years old, was admitted Nov 19, 1851. His diathesis is strumous, and he is labouring at present under caries of the ribs. Twelve years ago he had gonorrhœa, and soon afterwards symptoms of stricture presented themselves. Seven months before admission the difficulty in passing urine was much greater, it became thick and offensive, and he experienced intense burning pain in the perineum.]

What might have been the cause of this burning pain in this case of old stricture? Probably the unhealthy state of the urethra behind the bulb, in which region there was possibly ulceration going on; in fact, the greatest pain and the greatest mischief were seated *behind* the stricture. This is a most valuable symptom, and teaches the surgeon at once which is the probable state of parts in the case in hand; but I proceed with the case.

"Three small and hard swellings formed in the perineum; they slowly increased for three weeks, when the largest, about the size of a pigeon's egg, burst, and discharged a quantity of fœtid, yellow, turbid, and watery fluid. The patient again applied to a surgeon, who afforded some relief by the introduction of a catheter, and medicines."

Let us stop a moment to inquire what were those small and hard tumours situated upon the course of the urethra in the perineum? Now there are many surgeons who take a wrong view touching these tumours, and are afraid to interfere. Do not imitate them, but plunge the knife fearlessly into them. You will generally find these swellings hard, slow of growth, and somewhat painful on pressure. They remain hard for a long time, and retain a remarkable definite form, giving to the inexperienced touch the idea of a solid tumour; for the layer of fascia surrounding the corpus spongiosum yields but very gradually to the pressure of pent up urine or pus, and the shape remains regular until the fascia bursts. If in practice you find such tumours in a case of old-standing stricture, and there be some feverish symptoms, do not be afraid, as I stated before, of opening these obscure abscesses: You will thus give exit to fetid pus, and considerably relieve the patient.

"After the passing of the catheter, the man had shivering fits every other day, followed by intense heat over the whole body, which heat was in its turn succeeded by profuse perspiration."

Pray give a few moments' reflection to this shivering. It may be excited by catheterism, and it may result from a slight extravasation of urine, but not of blood. I must confess I do not understand the exact *modus operandi* of such causes. I can say to you it is caused by irritation; but that does not explain anything. What is shivering, in fact? It is an involuntary act of some sets of muscles, which, in ordinary circumstances, are under the control of the will; and the action must emanate directly from the spinal marrow. This dynamic influence of the medulla spinalis must be the real cause of the symptoms, whether the shivering arise from ague, formation of purulent matter, or extravasation of urine; for the control of the will is in each case temporarily destroyed, and the action is automatic. It is not an easy matter to show how the irritation, or disturbing cause, whatever it may be, proceeds to the spinal marrow, and how it leads to such temporary consequences. But let us proceed with the case.

"At the end of a week the patient was somewhat better, but up to the time of his admission he had not, at any time, passed more than a few drops of urine through the meatus, the greater portion of the fluid having continued to escape from the fistulous openings in the perineum. These apertures, had, however, been gradually closing up, and were succeeded by hard, nodular masses. The day before admission, the man was seized with absolute retention; he sent for a surgeon, who, after repeated and determined attempts to pass a catheter, causing very great pain and bleeding from the urethra, failed in accomplishing his object."

I shall here remark that it is always a serious matter to excite, with an instrument, any bleeding from the urethra. This laceration of the mucous membrane should always, if possible, be avoided, for it may be followed by results of a very unpleasant kind. I am aware that bleeding from the meatus is generally looked upon as a trifling accident; but I would warn you to beware giving rise to such hemorrhage; a single drop of blood is a mark of injury. Do not think too lightly of it—it is the evidence of mischief.—*Lancet, Sept.* 11, 1852, *p.* 235.

102.—ON PUNCTURING THE BLADDER THROUGH THE SYMPHYSIS PUBIS.

By Henry T. Chapman, Esq., late Senior Surgeon to the St. George's and St. James's Dispensary.

[The following description of an operation for the relief of distended bladder, was communicated to the 'Lancet' by Mr. Chapman, in consequence of no allusion having been made to such a mode of operation, during the recent discussion on this subject at the Medico-Chirurgical Society. It was performed by Dr. Brander, Surgeon in the East India Company's service, and published in the 'Transactions of the Medical and Physical Society of Calcutta' for 1838.]

Commencing his memoir by a critical review of the three operations by which the bladder is ordinarily reached, and setting forth the difficulties, inconveniences, and dangers, attending them all, Dr. Brander states, that it occurred to him, from a consideration of the anatomical relations of the viscus, that there was yet one situation, which had hitherto been overlooked, where the bladder, in its normal condition, approached nearer to the external surface of the body than at any other point, and where, moreover, the simplicity of its relations promised not only to facilitate its puncture, but, at the same time, very materially to diminish the risk and inconveniences of the operation. This situation is the symphysis pubis; and Dr. Brander at once proceeded to verify his impression of its superior eligibility by introducing a trocar into the bladder, at this point, in the dead body, and afterwards dissecting the parts carefully. The satisfactory result of his experiments induced him, at a subsequent period, to operate on the living subject, and with complete success, *quoad* the operation; the death of the patient, in a few weeks, from another malady, affording him the opportunity of a post-mortem examination, which demonstrated that no injury had been caused by the puncture, either to the organ itself or to any other part, the small wound being so perfectly healed that its cicatrix could scarcely be detected.

The particulars of a second successful case are given in the appendix to the same volume; and Dr. Brander informed me, when in England on furlough last year, that two more operations of the kind had since been performed in India. He employs a flattened trocar, and has never experienced the slightest difficulty in plunging it directly into the bladder, through the centre of the fibro-cartilage, in the dead or living subject. In his first operation, he divided the soft parts over the symphysis before introducing the trocar; in his second, he dispensed with this preliminary.

In the absence of Dr. Brander's data, I lay before your readers the following details of two trials of the operation which I have made upon the dead body. After injecting half a pint of water, I attempted, in the first instance, to pass Ponteau's curved trocar, used for puncture of the bladder from the rectum, through the symphysis; but it was too large to enter. I then tried a small hydrocele trocar, which glided readily between the bones, and drew off some water. On opening the abdomen, I found that the canula, which was little more than two inches in length, had barely penetrated the bladder, but an incision through a considerable layer of fat over the os pubis allowed me to push it nearly an inch farther. The canula had entered the bladder midway between the vesical orifice of the urethra below and the reflected peritoneum above, a full inch from the latter, even in the undistended state of the organ. The passage between the bones lay exactly in the centre of the symphysis, where it recedes downwards and backwards at the root of the penis. The direction of the instrument was at right angles with the symphysis, or at an angle of forty-five degrees with the axis of the body prolonged between the thighs. At no other point would the trocar enter, nor could I give it any other direction.

In my second experiment I used a flattened, curved trocar, rather more than four inches in length, with a lancet point, the canula of which, in its narrow diameter, was not larger than a No. 3 catheter. With my fore-finger resting firmly on the side of the canula, about two inches from the point, as a guard, I experienced no difficulty in introducing thus much of the instrument into the bladder at the spot indicated, and drew off its contents in a full stream. On laying open the bladder, an inch of the canula projected into its cavity, this subject being much emaciated. I then pressed it forward until the entire four inches had been introduced; but even now its extremity did not come in contact with the opposite mucous lining, as the curve of the canula gave it a more downward course than that taken by the straight hydrocele trocar. As nearly as I could judge, it pointed towards the junction of the sacrum with the os coccygis.

The facility and immunity from danger of this operation will scarcely, I think, be disputed. The peritoneum cannot be wounded, even should the bladder not have risen above the pubis. There are no vessels nor other important parts to be avoided, and extravasation is far less to be apprehended in this situation than in any other. On the last point I may mention, that, having removed the bladder in order to examine more minutely the seat of puncture, I could no longer discover the orifice; and although the viscus was then filled with water, and considerable pressure made upon it, not one drop escaped. It would thus appear that should the canula be withdrawn immediately after evacuation by puncture, or its point accidentally slip out of the bladder, there would be little or no risk of effusion; the walls of the bladder gliding upon each other to such an extent during its contraction as to produce a valvular closure of the opening. Ossific union of the two bones is the only obstacle which seems likely in any case to impede the passage of the instrument; but this occurs far too seldom to be brought forward as a valid objection to the operation.

Admitting that retention of urine may be relieved in the vast majority of instances without tapping the bladder, what, I ask, are we to do in those extreme cases where the prospect of extravasation is imminent, and yet, in Mr. Simon's words, "no instrument can find its way into the bladder, nor one drop of urine out of it?" Two very opposite courses were severally advocated in the discussion of Mr. Cock's paper, at the Medico-Chirurgical Society, by those gentlemen who impugned the necessity of resorting to puncture. Mr. Arnold was for skilfully forcing the stricture; nearly all the other speakers were in favour of baths, opium, and croton oil. and perseverence in *la médicine expectante.*

Now, it is most true that the point of a catheter may be, and often is, very successfully driven into the bladder, through every obstacle, by a bold and dexterous manipulator. But I have seen much mischief done —and that at the hands of surgeons of no mean distinction—by forcing a stricture, closed by inflammation or congestion, rather than have recourse to any of the current modes of puncture for the evacuation of an over-distended bladder, all of them more or less formidable, that I cannot but regard hopefully Dr. Brander's comparatively slight operation, as an alternative infinitely preferable when some decided step for relief can no longer be delayed.

And, on the other hand, is there no small risk that forbearance may sometimes be carried too far? The chances of ulceration of the urethra behind the stricture are in direct proportion to the violence and duration of inflammatory action. But should it turn out that we possess a tolerably safe and certain means of emptying the bladder, which will enable us, at an earlier period than would perhaps be justifiable by any of the old operations, not only to remove the most urgent and dangerous symptom, but to take off the strain upon the inflamed part, which, as long as it lasts, is calculated to neutralize both antiphlogistic and sedative measures, all danger of ulceration may thus be avoided, and time will be afforded us to push the treatment of the stricture to a successful issue.

Where the urethra has actually given way, or even where a *suspicion* of ulceration exists, few surgeons, I think, would hesitate to adopt the modified perineal operation described and practised by Mr. Simon, which is, nevertheless, still a somewhat formidable affair. Puncture through the symphysis pubis, however, appears to me to bid fair, not merely to displace the supra-pubic operation "in those very rare cases of prostatic tumour" to which Mr. Simon would seem to restrict it, but, by obviating the danger of rupture of the urethra as a consequence of retention of urine, to supersede Mr. Simon's and all other methods of puncturing the bladder for its relief.—*Lancet, July* 10, 1852, *p.* 42.

103.—ON HYDROCELE.

By Bransby B. Cooper, Esq., F.R.S., Senior Surgeon to Guy's Hospital, &c.

[In our last volume, page 319, will be found Mr. Cooper's remarks on the treatment of simple hydrocele, taken from his clinical lectures at Guy's Hospital. In his succeeding lectures on the same subject, Mr. Cooper considers, first, *the Diagnosis of Hydrocele;* second, *Congenital Hydrocele;* and lastly, *Encysted Hydrocele.*]

Diagnosis of Hydrocele.—A hydrocele may be mistaken for a hernia, diseased testicle, varicocele, or hæmatocele; or it may, in fact, be combined with any of these diseases,—a circumstance which would tend greatly to increase the difficulty of the case, both with respect to diagnosis and treatment. In addition to this, hydrocele itself is subject to varieties; it may be congenital, encysted, or diffused; the fluid may be contained in the whole cavity of the tunica vaginalis, or the latter may be divided, in consequence of adhesive inflammation, into two or more distinct cavities, each containing fluid, the whole constituting what is termed a multiform hydrocele.

The collection of serum may likewise not only be situated in the scrotum, but in the inguinal canal; or it may form a small tumour just below the external ring, between it and the testicle, varying, in this respect, from the common form of the disease. The knowledge that these modifications exist, is sufficient to show the necessity for a careful examination into all the circumstances, both constitutional and physical, attendant upon the formation of a tumour in the scrotum, before the diagnosis can be confidently formed, or appropriate treatment adopted. One of the most frequent deviations from the ordinary conditions of a hydrocele is absence of transparency, a peculiarity which tends, perhaps, more than any other, to render the diagnosis obscure and uncertain; while, in its presence, scarcely any other sign of hydrocele need be sought for, the transparency of the tumour being in itself a sufficient proof that it can contain nothing more than a translucent fluid. The fact of the tumour being transparent, although conclusive as to the disease being hydrocele, does not still, however, prove that the hydrocele is not complicated with some other disease; the surgeon must therefore examine closely into this point, and must likewise make himself acquainted with the peculiar character of the hydrocele itself. In the case I quoted at the commencement, the transparency of the tumour was evident at the first examination; but, as I have already said, this diagnostic mark is often either entirely absent, or at least very obscure. The circumstance which may interfere with the transparency of a hydrocele, are thickening of the skin, œdema of the cellular membrane, hypertrophy of the dartos and of the cremaster muscle, thickening of the tunica vaginalis, and opacity of the secreted fluid. I have seen several cases in which, owing to different circumstances, transparency was quite absent from the tumour. Any cutaneous disease in the scrotum may destroy the diaphanous condition of the skin of this part, and obscure the transparency of a hydrocele; but in that case, the appearance of the part externally would account for the loss of transparency; and if the other symptoms of the disease were present, the condition of the skin of the scrotum would scarcely produce much difficulty in forming a just diagnosis. Œdema of the cellular membrane may prove very difficult to distinguish from hydrocele, for in its general appearance the scrotum would then closely resemble hydrocele, with the single exception of wanting transparency. Upon a close examination of the case, it will, however, be found, that the patient manifests a general anasarca, that the tumour *pits* upon pressure, instead of being elastic, and that generally both sides of the scrotum are affected at the same time. I once had a private case in which there was even a distinct amount of transparency in the scrotal tumour; I therefore punctured it with the trocar; but a few drops only of serum exuded, and I found that I had been so far deceived by the transparency as to puncture an œdematous scrotum, in the belief that it was hydrocele. In this case I made small punctures in different parts of the scrotum, serum exuded, and the patient recovered from the disease. I have seen several cases of this kind, and in some of them the swelling had extended up one or both cords. Such cases should be first treated by puncture, to evacuate the fluid, and afterwards by constitutional remedies, to combat the anasarcous tendency. Hernia and hydrocele may be concomitant with each other; the latter being the consequence of some morbid change produced in the tunica vaginalis by the influence of the protruding intestine,—hypertrophy of the dartos and cremastor muscle often accompanying this complication,—so that the transmission of light through the structures covering the tumours is entirely prevented.

In 1840, Mr. Salt, of Dunmow, sent me a gentleman who had a hernia, and who consequently always wore a truss; in spite of this a tumour formed in the scrotum, and this, naturally enough, was looked upon by the patient as caused by his rupture. Upon examining the swelling, I found it perfectly isolated from the abdomen. I tried it by light in the usual way, but could discover no transparency. I therefore thought it right to explore the swelling. This I did by cutting down to the tunica vaginalis; and at the time I did this I was under the impression that the swelling was a hæmatocele, which might have been caused by the pressure of the truss. When I exposed the cremaster muscle, I found it, as well as the dartos, much thickened. Upon dividing the cremaster, I exposed the tunica vaginalis, and I perceived at once that this was distended with fluid. I laid it open, evacuated a quantity of the fluid usually found in a hydrocele,—performing what is called the operation by *incision.* The patient perfectly recovered.

In cases of difficulty, requiring exploration, I believe the mode of operating just described to be safer than any other, but it does not always produce a radical cure. In operating for hernia, I have frequently found a hydrocele of the tunica vaginalis connected with it, especially when the hernia has been congenital.

A common cause of absence of transparency in a hydrocele is thickening of the tunica vaginalis itself. In such cases, it must obviously be impossible to tell by mere examination whether the want of transparency proceeds from thickening of the tumour, or from some alteration in the character of the fluid within the tumour. If, (with the exception of transparency) every other indication of hydrocele be present, there can be no reason why we should not in these cases proceed at once to tap the tumour with a trocar; but if there be other circumstances to complicate the case, we ought to proceed by exploration, as I have just described. I had a patient in Phillip Ward, Guy's Hospital, who had a tumour of the scrotum which presented all the appearances of hydrocele; it had existed for twelve months: and he stated, that during its growth it had given him no inconvenience beyond that which arose from its weight; fluctuation was indistinct in this case, there was total want of transparency, and the weight of the tumour was unusually great in proportion to its size. I determined to evacuate the contents of the tumour by incision; I therefore proceeded cautiously to cut down upon the tunica vaginalis; I found it extremely thickened, highly vascular, and presenting altogether a very unnatural appearance; the evacuated fluid was like coffee-grounds. The patient stated, that he had struck the tumour about three months before, and that from that time its weight had much increased; probably it was then that the blood was effused, which gave to the fluid its peculiar colour and appearance. I have had other cases in which I found the tunica vaginalis very much thickened, particularly when an operation had been performed previously. Only a few days ago I operated, a second time upon the hydrocele of a gentleman, and, according to my invariable practice, examined the tumour before operating, to ascertain if the transparency were present; it was now, however, quite opaque, although it was transparent at the time of the first operation, all the other signs of hydrocele being present. I nevertheless proceeded to tap the tumour. I now found the tunica vaginalis so thickened as to offer considerable resistance to the entrance of the trocar; but the fluid was precisely similar to that usually secreted in this disease, and to what I had drawn off in the first operation. In a case which I admitted some time ago, into the hospital, there existed a large swelling in the scrotum, which I could not distinguish with certainty to be a hydrocele; I therefore opened the tunica vaginalis by incision, and let out a quantity of brownish fluid. The tunic itself was very much thickened, cartilaginous in many places, and at its upper part quite ossified.

Mr. Cock had a somewhat similar case, in which the tunic had become quite cartilaginous, and was thrown off by sloughing, after an incision had been made into it. Ossification of the tunic is not unfrequent; this would, of course, necessarily destroy the transparency in hydrocele; probably, wherever the formation of cartilage has commenced in the tunic ossification would ultimately ensue. There is scarcely an hospital museum in London which does not contain numerous specimens of these peculiar conditions of the tunica vaginalis; that of the College of Surgeons is particularly rich in them.

The contents of common hydrocele are subject to changes which may entirely destroy the transparency of the fluid, and would, of course, tend as much to render the tumour itself opaque as any changes in its tissues could do. Ordinarily, this fluid is of a yellowish or straw colour, quite transparent, having a specific gravity of about 1020, which is rather less than that of the serum of the blood; it coagulates by heat, and by the addition of mineral acids, but less firmly than blood serum, in consequence of its containing less albumen; it contains also the saline matters of the serum. The quantity of fluid present in a hydrocele may vary from an ounce to several pints; I think six ounces may be taken as the average quantity.

Sometimes this fluid is quite turbid, and of a milky whiteness, resembling, indeed, a mixture of milk and serum; in acute cases, following external injury, the fluid will often be found of a reddish hue, or even as dark as coffee, according to the quantity of blood it contains. A large quantity of cholesterine is sometimes found in the fluid of a hydrocele; this substance presents a crystalline appearance upon the surface of the fluid after it has cooled; if this be skimmed off, it will be found to dissolve in boiling alcohol, from which it again separates in the crystalline form of large flat plates on cooling; these are insoluble in caustic potassa. Flakes of fibrin, portions of amorphous coagulated albumen, fatty matter, and even small cartilaginous bodies, are sometimes detected in the fluid of common hydrocele. When extraneous substances are found in the fluid, it is usual for the tunica vaginalis itself to have undergone some of the morbid changes I have already described, besides that which causes it to secrete the serous fluid; in chronic cases it will often be found, as I have already described, thickened, cartilaginous, or even bony; these conditions are, however, invariably attended by some constitutional derangement. From a reconsideration of all these abnormal conditions, it is clear, therefore, that the nature of the fluid and the condition of the tissues and testicle should all engage the attention of the surgeon; by these he will know whether the disorder is to be considered local or constitutional, the treatment being regulated accordingly.

Orchitis, from any cause, may lead to the formation of a hydrocele, and if the fluid secreted be transparent, the diagnostic mark will be sufficiently obvious from the tumour being opaque posteriorly and transparent anteriorly; but even should the swelling be opaque, the history of the case, the weight of the tumour in proportion to its size, and the characteristic pain of an inflamed testicle, will usually sufficiently explain the nature of the case. I have met with several such cases, and have rarely found it necessary to treat them as hydrocele, but employ the usual antiphlogistic remedies to allay the inflammation of the testicle, and then, by applying blue ointment and camphor with gentle pressure upon the scrotum, the inflammation and the hydrocele generally disappear together. The disorder will not, however, terminate thus should the orchitis arise from a syphilitic taint, nothing but mercury will then effect a cure. Sir Astley Cooper has published a case in which hydrocele was combined with syphilitic orchitis; the fluid had been previously drawn off but had quickly re-accumulated, and the patient had consulted Sir Astley with the object of getting the hydrocele injected; but he, observing that there were present copper-coloured syphilitic blotches, recommended that the operation of injecting the tumour should not be attempted until the secondary symptoms were cured. Mercury was accordingly administered, and the consequence was, that the orchitis, cutaneous eruption, and hydrocele all disappeared together. I have never seen a case exactly resembling this. Mr. Roberts, of Finsbury-square, sent me a gentleman who had swelled testicle with hydrocele. I drew off the water, and treated the swelled testicle as if enlarged from common inflammation; the hydrocele quickly returned, but the disease in the testicle remained. The patient had no sore throat, nor eruption, nor any other indication of syphilis, although he stated that he had had a chancre four months before. I ordered him calomel and opium night and morning, which was continued until he became constitutionally affected by the mercury, when the testicle was cured and the hydrocele entirely removed. Three or four such cases have occurred in my practice, but, I must acknowledge, without equal evidence of syphilitic taint. When the important feature of transparency is absent from the tumour from any of the causes I have described, the diagnosis must be formed, either positively, from the presence of other signs of hydrocele, or negatively, by ascertaining that none of the diseases with which hydrocele may be complicated are the cause of the enlargement of the part; in that case the swelling can only be the consequence of hydrocele, or some anomalous disease. Under these difficult circumstances, the surgeon should proceed with great caution; for, although the tumour may consist of nothing more than a collection of water, the treatment can only be judiciously regulated by a complete knowledge of the exact position of the fluid and the peculiar structure affected. If an exploration be determined on, it must be pursued with great care, either by puncture with a grooved needle, or by making a careful incision in the tumour; the latter is, I think, the safer operation, as it may be performed under the guiding influence of the sight as well as of the hand. Even when the tumour is transparent, a difficulty may arise in consequence of the testicle being in an abnormal situation within the scrotum.

It is usually situated behind and rather below the centre of the tumour; but it sometimes happens that the testicle is adherent to the tunica vaginalis reflexa, and is placed in front of the swelling. When the parts are in this condition the testicle is in danger of being pierced by the trocar; if the hydrocele be transparent, there is no excuse for such a catastrophe, for the next relative situation of the testicle with the hydrocele may generally be discovered. If the swelling be opaque, the abnormal situation of the testicle can be ascertained by manipulation, as the tumour is fluctuating laterally and posteriorly, but not in front, at the usual point, where, indeed, the resisting hardness will clearly indicate the position of the testicle. I have punctured the tunica vaginalis posteriorly, or at the side of the testicle, in several cases, and I invariably seek for the diagnostic mark of transparency, even if I had tapped the patient before, as the operation may have been the very means of producing the adhesion of the testicle I have just described, and, without precaution, it is very likely to be wounded by the trocar.

On the 30th June, 1841, a patient was sent to me with a hydrocele: he had already been tapped. I examined the tumour, and found there was but little transparency, although, strictly speaking, something of this character could be distinguished. I proceeded to draw off the fluid. In introducing the trocar, I felt a very considerable resistance, and, when I withdrew the instrument, no fluid followed; the patient also complained of a pain in the part, which led me to believe that the testicle had been wounded. I immediately removed the canula, and, upon again examining the tumour with a light, I perceived that it was quite transparent at its posterior part. I then introduced the trocar in this transparent part of the tumour, and drew off seven ounces of fluid. I did not inject the tunic in this case, as I had at first intended; but, nevertheless, the patient was radically cured, and that, too, without suffering any ill effects from the accidental injury of the testicle. There are few operative surgeons who have not at some time fallen into the above error.

I have remarked, in a former part of my lecture, that hydrocele may be mistaken for hernia. I need scarcely say how grave an error this would be, particularly if the surgeon were to attempt an operation. Generally, I do not, however, think it very difficult to distinguish a common hydrocele, under all circumstances, from a swelling caused by protrusion of viscera from the abdomen, especially from the circumstances that, hydrocele being unconnected with the abdomen does not receive those peculiar motions which are always imparted to the visceral protrusion by contraction of the abdominal muscles, as in coughing: and that a very different character is discovered by manipulation between the contents of a hernial sac and those of a hydrocele, the latter being incompressible, resembling a bladder filled with water, whereas a hernia feels either soft and plastic, as it were, or gives the idea of being distended with gas. Hydrocele and hernia are not unfrequently combined, as in the case I have already described, of the little boy. It appears not unlikely, indeed, that hydrocele may induce hernia, by drawing down, and perhaps weakening, the parts about the scrotum. In treating hydrocele, when thus combined with hernia, the latter ought first to be reduced, and, even then, I should prefer not injecting the sac of the hydrocele, but merely content myself with drawing off the fluid. Although I do not distinctly perceive that danger could arise from throwing in the injection, still, as more or less inflammation follows this operation, I should take the safer ground, and only employ the palliative treatment.

I do not think that, practically, there is much danger of taking a hydrocele for varicocele, unless it be a congenital hydrocele. In fact, the character of varicocele is quite different to hydrocele when the tumour is handled, for, instead of appearing to be a closed sac filled with fluid, it is evidently caused by a mass of tortuous vessels from which the blood is free to flow or be expressed by slight force. It is true, in congenital hydrocele the fluid can be forced out of the tumour; but, in that case, the transparency of the tumour would be diagnostic of its being hydrocele. If there be insuperable difficulties in distinguishing the nature of the swelling in the scrotum by ordinary examination, careful exploration ought to be resorted to, exactly as I have already described. This is the only plan for the surgeon to follow, if he desire to escape the dangerous contingencies which would be attendant upon any other active method of treatment.

[*Congenital Hydrocele.*—On the treatment of this kind of hydrocele Mr. Cooper remarks :]

The treatment in congenital hydrocele must be very different to that in the common hydrocele. The best mode of treatment is first to draw off the fluid, then to apply pressure upon the external abdominal ring to cause adhesion between the walls of the canal through which the tunica vaginalis communicates with the abdomen. If this can be effected, the congenital is at once brought into the state of ordinary hydrocele, and may be subjected to exactly the same treatment. Constitutional as well as mechanical treatment must be adopted, with the object of correcting the tendency to the formation of a fresh collection of fluid after the first quantity is drawn off. The pressure upon the ring is best made by a truss; but it is clear, that any contrivance which permits of the application of continuous pressure would answer equally well with a truss. Under any circumstances, I cannot think it right to attempt the radical cure of congenital hydrocele by injection; that is to say, so long as it remains in its congenital form. I should never venture to inject such a hydrocele, or to use any other local means for its radical cure; for I think that any treatment which would excite inflammation in the tunic would be attended with great danger, owing to the impossibility of confining the inflammation to the scrotum. Many of the French surgeons take, however, a different view of the subject, and do not hesitate to inject congenital hydrocele, only taking the precaution to press firmly upon the ring during the time the irritating fluid is being thrown into the tunic, and to prevent it from passing into the abdomen. After all, this must, I think, be a dangerous experiment; for although, by mechanical pressure, it is perhaps not difficult to keep the fluid itself out of the cavity of the peritoneum, pressure on the ring would prove a very ineffectual means of keeping the inflammation from extending from the tunica vaginalis to the peritoneum, which is, after all, the whole source of the danger. Independently of the danger, there is another argument against injecting a congenital hydrocele: it is quite unnecessary to run the risk, for in all such cases the connection between the scrotum and the peritoneum is easily obliterated when pressure is applied after the fluid has been drawn off in the common way. After adhesion has been produced in the canal, the fluid in the tunic is sometimes absorbed spontaneously; this may be promoted by the application of lotions, and in young subjects by acupuncturation in the scrotum. Occasionally, congenital hydrocele may be spontaneously converted into common hydrocele, owing to the irritation excited by the presence of the fluid in the tunic, producing adhesive inflammation at the point where the cavities communicate, when, in consequence, complete obliteration of the point of communication ensues.

Congenital hydrocele is very common in newly-born infants. The only treatment required is to press the fluid back into the abdomen, apply a slight compress upon the external ring, and keep the scrotum constantly wetted with a stimulating lotion. In children, this treatment will seldom fail to produce obliteration of the communication between the scrotum and abdomen, which will be followed by absorption of the fluid in the tunica vaginalis; indeed, this is generally effectual up to the period of puberty.

I have stated before, that the condition of the parts which leads to congenital hydrocele, may exist without any accumulation of fluid taking place; but such a person is always subject to these accumulations, and at whatever period of life they may occur, the disease is still termed congenital.

It is not always easy to diagnose a tumour in the scrotum, as a congenital hydrocele, as it is not uncommon for intestine to protrude into the narrowed neck of the tunica vaginalis, at the internal ring, so as to prevent the fluid from passing back into the abdomen. There is, however, another diagnostic mark in congenital hydrocele, which it is useful to remember,—the testicle is generally placed quite at the lower part of the tumour, which makes it appear as if a smaller tumour were superadded to the chief mass, If the tumour be transparent, the testicle may be seen lying below the collection of fluid.

Congenital hydrocele is very likely to be complicated with congenital hernia, and every precaution must be taken in ascertaining the presence or absence of hernia, before a truss is applied; if intestine be discovered protruding at the internal ring, it must be returned into the cavity of the abdomen, the fluid then evacuated from the tunica vaginalis, and a truss applied, this will tend equally to produce the cure of the hydrocele and the hernia as far as relates to the congenital form, for the hernia cannot return if the communication be obliterated; and should the hydrocele recur, it would only be in the common form, and not congenital.

Hydrocele of the spermatic chord is a variety of hydrocele in which the tumour extends from the scrotum through the external as high up as the internal ring, giving to the swelling a sort of hour-glass form, in consequence of its being constricted by the external ring. This variety of hydrocele is produced by the obliteration of the communication being limited, not extending, as it usually does, from the internal to the external ring. The tumour itself takes its elongated form, owing to the fluid extending into and filling the tunica vaginalis of the chord as well as that of the testicle. In these cases, after the fluid has been drawn off in the usual way, the sac should not be injected until it has been ascertained beyond question, that hernia is not concomitant with the hydrocele; for as I have explained, a hernia may prevent the fluid from passing up into the abdomen, even if the hydrocele be congenital. Therefore, before the injection is employed, we ought to learn satisfactorily, that the canal between the serous cavities of the scrotum and abdomen is sealed by permanent adhesion.

In 1844, Mr. H., a gentleman from Norfolk, aged 37, consulted me with a swelling of the scrotum, which had every sign of common hydrocele, with the exception that the apex of the pyramidal tumour extended through the external up to the internal ring. The tumour was perfectly transparent, and the testicle was in the usual position. I at first thought it was a congenital hydrocele; but was not able to press the fluid into the abdomen. I therefore tapped the hydrocele, and then examined for the purpose of discovering whether there was any hernial protrusion through the internal ring; finding no protrusion whatever, I recognised the case as a complication of the common hydrocele of the tunica vaginalis testis and chord. I injected it at once with the solution of iodine. The patient was perfectly cured.

Hydrocele of the chord alone is another variety of hydrocele; in this the fluid is contained within the serous sac of the chord, and not in the tunica vaginalis testis.

A short time ago, one of my dressers drew my attention to a patient who had come into the surgery for relief. He had a tumour in the scrotum, between the testicle and external ring; the testicle being in no way implicated with the swelling. The tumour was about the size of a bantam's egg, nearly incompressible; offering, therefore, but very indistinct fluctuation; no transparency could be perceived; it was quite unattached to the skin, which moved freely over it; and I felt assured that the tumour contained fluid, and, as the man stated that he had received a blow, I had some suspicion of its being chronic abscess. I punctured the tumour, and let out about half an ounce of serum of the usual appearance of hydrocele fluid, straw-coloured and coagulable ; it contained no spermatozoa, proving it to be hydrocele of the chord. I enlarged my opening, passed my little finger into the tunic, and felt that the sac was completely closed, both towards the external ring and the tunica vaginalis of the testicle. The sac became obliterated, and the patient got well.

This tumour must necessarily have resulted from a peculiar obstruction of the tunica vaginalis of the chord at different points of its course, isolating the fluid both from the testicle and the inguinal canal.

We find, therefore, that the accumulation of fluid may take place in the scrotum, between the testicle and the external ring, as in the case just read, or in the inguinal canal between the two rings; in either case, the diagnosis is more difficult than in common hydrocele; the form of the tumour is different, being round instead of pyramidal; it is also generally smaller, and its comparative weight is less; the fluctuation is often very indistinct, and the transparency altogether absent, in consequence of the small quantity of fluid in the tumour not producing sufficient attenuation of the involved tunics. Indeed, the physical indications of hydrocele upon which we generally rely, are, in these cases, very indistinct; at the same time, I believe that an experienced surgeon will possess sufficient tact to enable him to form a correct diagnosis, without much difficulty, as to the presence of fluid in the tumour; but it is, I think, almost impossible to ascertain whether the fluid be placed within or without the serous sac. In the latter case, the tumour comes under the denomination of encysted hydrocele,—a form of the disease which, properly speaking, has nothing whatever to do with the pathology of serous cavities, and which will hereafter be described.

When hydrocele of the chord is situated between the external ring and the testicle, it forms a small rounded tumour, perfectly isolated from the parietes of the abdomen, and on that account, upon proper examination, it cannot be mistaken for a hernia. It is tense, and cannot be emptied by pressure; nor does its form alter by change of position; therefore, it cannot be varicocele; and, though the regularity of its surface, added to fluctuation, will lead the surgeon to infer that it is neither a fibrous nor a fatty tumour, at the same time, it should be known, that the last point is not always to be determined without difficulty.

Mr. G., of Wisbeach, aged 42, consulted me in April last, being the subject of a tumour in the scrotum, of which he gave the following account:—Twenty years before, in jumping on a horse's back, he injured the scrotum, and very soon after perceived a slight swelling, which gradually increased in size, and seemed to him, as he said, like a third testicle. It had latterly become enlarged, and given him pain; it had acquired the size of a pullet's egg. Upon examination, my first impression was, that the tumour was omental hernia; but, upon closer investigation, I found it quite isolated from the cavity of the abdomen. I then suspected it to be encysted hydrocele, or hydrocele of the chord; but the absence of fluctuation and transparency, and a peculiar sensation of general solidity in the tumour, rendered the diagnosis to me so inexplicable, that I sent the patient to Sir Benjamin Brodie, who wrote me word, that he believed it to be either a steatoma or a fibrous tumour, and referred me to his 'Lectures on Pathology and Surgery,' (p. 271), where he relates a similar case.

The patient now told me, that he had already consulted Mr. Lawrence, who, it seems, had formed a just diagnosis, as he had told the patient that it was a swelling which must be cut out. I therefore recommended him to return to Mr. Lawrence; but, from what I have heard, I believe the operation has never been performed,—consequently, the case remains still involved in mystery. Is it not possible, that this may have been originally a case of hæmatocele, in which the fibrin had become organized, and adherent to the tunica vaginalis,—a possible condition, as proved by a preparation of John Hunter's, in the Museum of the College of Surgeons?

Having ascertained that the enlargement is not caused by any of the diseased conditions mentioned above, we shall perceive, that the presumption must be, that it is hydrocele of the chord, either external or internal to the tunica vaginalis of the chord. Which of these varieties it is, can only be proved by examining the fluid after evacuation. So much difference will be found between the fluid from the two kinds of hydrocele, that the diagnosis may be at once established with ease from this circumstance.

Within the last week, a patient, between twenty and thirty years of age, came into the hospital with a tumour in the scrotum of rather a doubtful character. Sometime before, he had received a blow upon the scrotum, and the tumour began to form soon after the injury; it was placed on the anterior part of the scrotum, between the testicle and the external ring; it was round, very circumscribed, and so tense, as not to give the diagnostic fluctuation. With difficulty and careful examination, it was discovered to be transparent, although not to a great extent. I considered it to be encysted hydrocele. I tapped it, and evacuated yellow serous fluid, like that of ordinary hydrocele; this fluid did not contain spermatozoa, which, with its general character, abundantly proved to my mind, that the disease was hydrocele of the chord.

[*Encysted Hydrocele.*—Mr. Cooper next proceeds to encysted hydrocele, on which subject he says:]

This is not, properly speaking, a disease of serous membranes. The fluid is not contained in a normal cavity, but is secreted by an adventitious cyst, itself the result of a diseased action. The fluid which these cysts contain is very different from that of common hydrocele; it does not at all partake of the character of serum, but is an aqueous fluid, of very low specific gravity, about 1004 or 1006, very little above distilled water, generally limpid and colourless, and containing but a small quantity of albumen, so that it does not coagulate like the fluid of ordinary hydrocele, by the application of heat or strong acids, but merely becomes turbid. It contains a considerable amount of chloride of sodium. The quantity of fluid obtained from these cysts is generally small, not often exceeding half an ounce. In a few cases I have, however, obtained several ounces.

There is one circumstance constituting a grand characteristic connected with the fluid of encysted hydrocele: it invariably, so far as my experience goes, (and I have had an opportunity of examining a great number of cases,) contains spermatozoa, generally in motion. Upon placing a drop of this colourless fluid under the microscope, these will be readily seen; and this is so constantly the case, that if I draw off from a hydrocele a limpid, colourless fluid, I look for the spermatozoa as a matter of course. Mr. Liston was the first to point out this circumstance.

On the 21st of February, 1850, Mr. G., aged 44, consulted me for a large swelling on the left side of the scrotum, unaccompanied by any pain, and merely inconvenient from its weight and size. He could give no account of the cause of the enlargement, unless, he said, it could be attributed to a blow he had received on the part two years before; but that the increase of size of the scrotum was, at any rate, not immediate upon the infliction of the injury. He had observed an enlargement of the part about twenty months, but it had increased one-half of its present size in the last six months, but has been all along free from pain.

The tumour communicated, upon manipulation, a general sensation of fluctuation, and upon examination with a candle in a dark closet, it was found more than usually transparent. I therefore at once tapped it, under the impression that it was hydrocele of the tunica vaginalis, drew off ℥xviii. of fluid, when I was immediately struck with its colourless and limpid appearance. I suspected, therefore, that it was a case of encysted hydrocele, and immediately placed a portion of the fluid under the microscope, when numerous spermatozoa were discovered in active motion. The specific gravity of the fluid was only 1004, and heat, on the addition of nitric acid, merely gave a turbidity to the effusion,—proving the wide difference between it and the secretion from a common hydrocele. In six weeks the fluid began to form again, and in July the swelling had returned to a considerable extent; and I therefore proposed to Mr. G., not only to submit to the same operation to which he had before been exposed, but also to consent to the attempt at the radical cure, to which he readily acceded; and on the 10th of July, 1850, I drew off ℥xvi. of fluid, which still contained an abundance of spermatozoa. I, however, injected the hydrocele, throwing in ʒss. of the compound tincture of iodine and a drachm and a half of distilled water, and leaving it in the sac to become absorbed. But little inflammation followed, and the patient became permanently cured.

March 19, 1850. Sir H. F., Bart., aged 53, requested me to tap his hydrocele,—an operation to which he had been before exposed, I believe, upon two occasions. There was nothing peculiar in the appearance of the swelling, nor could he attribute the disease to any cause. He suffered no pain. The swelling communicated a distinct sensation of fluctuation upon pressure, and was transparent when a candle was placed behind it. I drew off four ounces of fluid, when the appearance of the secretion immediately convinced me of the presence of spermatozoa, which the examination under the microscope proved to be correct. The sp. gr. of the fluid was 1·006, and heat or nitric acid only produced slight turbidity, constituting, in my opinion, an evidence of the disease being an encysted hydrocele. An evaporating lotion was ordered, and some aperient medicine. In four months after, this gentleman came to me again, when I performed the operation for a radical cure, by injecting the compound tincture of iodine and water, in the proportion of one-fourth of the tincture, and the hydrocele was cured. In this case, a considerable degree of inflammation followed the injection, which was, perhaps, partly attributable to a long walk taken the day after the operation.

June 3rd, 1851. Mr. S., aged 56, was sent to me, from Hertfordshire, the patient being considered to be the subject of a diseased testicle. Upon entering into the history of the case, I was led to doubt the justness of the diagnosis, for the patient described he had never suffered any pain, neither in the part nor in the loins, and probably the absence of transparency had led to the suspicion of the testicle itself being the seat of the disease. After a most careful examination, I came to the opinion that the disease was hydrocele, and proceeded at once to draw off the fluid, when about eleven ounces of clear, colourless fluid was evacuated. The sp. gr. of the fluid was 1·005, and the addition of nitric acid or heat produced merely a slight turbidity. Placed under the microscope, numerous spermatozoa were seen, a few mucus corpuscles, and several epithelium scales were also detected. When the fluid had been drawn off, the testicle was found adherent to the back part of the scrotum, and the patient being of a strumous diathesis, it is very probable that a small strumous abscess might have opened itself into the tunica vaginalis at some earlier period of life, and led to the formation of the hydrocele; at the same time this would account for the presence of the spermatozoa. Nor is this inconsistent with the account given by the patient of never having suffered pain; for how frequently do we find advanced cases of chronic abscess of the testicle unattended by any pain whatever?

On the 22nd July, 1851, Mr. J. G., aged 46, was sent to me, from Kent, with an anomalous swelling in the scrotum, the nature of which my medical friend could not make out to his own satisfaction. Upon examination, I found a tumour, about the size of a testicle, situated between the head of the epididymis and the spermatic chord, which, upon pressure, produced the sensation of pain, as if the epididymis or testicle itself had been compressed. Nothing like fluctuation could be detected, but it rather gave the feeling of being lobulated, like steatoma, to which I was inclined to attribute the swelling; or, at any rate, I had, at this period of the investigation, made up my mind to its being of a solid nature, either fat or fibrous, and was, perhaps, led to that suspicion, from having seen a case of steatoma in the scrotum a few weeks previously,—a case which was seen both by Sir Benjamin Brodie and Mr. Lawrence. I proceeded, however, to examine the tumour, in a dark closet, by transmitted light, when I immediately discovered its perfect transparency; proving at once the existence of fluid, although no fluctuation could be detected, probably from the tension of the containing cyst. I drew off the fluid with a very small trocar and canula, and evacuated three drachms of colourless fluid, which was of very low specific gravity, contained abundance of spermatozoa, and scarcely a trace of albumen could be detected, either by heat or nitric acid. No epithelium scales or mucus could be detected in the fluid.

Encysted and diffused hydrocele have been considered by many as the same disease, with the exception, that the fluid of the encysted hydrocele is contained in an adventitious sac. I believe, however, that they are quite distinct diseases, and that what is termed diffused hydrocele consists merely in an anasarcous collection of fluid, caused by a constitutional tendency to œdematous effusions, or by some mechanical interruption to the circulation of the blood through the spermatic veins, leading to a deposition of serum within the cellular membrane of the part affected. I think that encysted hydrocele is always more or less connected with the tubuli seminiferi of the testicle, or epididymis or vas deferens of the chord. How does it otherwise happen that spermatozoa are always found in the fluid? The peculiar pain, as if the testicle were pinched, when the hydrocele itself is compressed, is another evidence of the testicle being involved in the disease; if such cysts were merely adventitious, or simple sero-cyts, there could be no reason for their containing spermatozoa, nor for the cysts being always connected with the testicle, epididymis, or spermatic chord, a condition which invariably exists, and which proves, I think, that there is some reciprocal action going on between the excretory ducts of the testicle and the cysts themselves. It is, nevertheless, very difficult to arrive at a satisfactory conclusion respecting the exact character of these cysts, or to explain why the fluid which they contain should always be mixed with semen. Small cystiform growths are commonly met with in connexion with different parts of the testicle, but these are generally very small and pedunculated, and are more frequently fleshy or cartilaginous than cysts containing fluid. I have examined the contents of many of these small growths, and have never found traces of spermatozoa in them; therefore it is clear that they differ from the cysts containing the kind of fluid already described, and which constitute a peculiar variety of hydrocele. One thing is certain; the cyst or encysted hydrocele communicates in some way with the secreting or excreting apparatus of the testicle. How that communication is made remains yet to be explained. It is not, I think, impossible, that, like cystiform growths in other parts of the body, these cysts may commence in dilatation of the tubuli seminiferi, the walls of which under irritation may thicken to a sufficient degree to enable them to support the pressure of the fluid secreted within them. Such a cyst may perhaps be formed in the same manner, and, indeed, resemble in every respect a common sero-cyst; but when found in connexion with the excreting apparatus of the testicle, the fluid they contained would necessarily be mixed with some of the secretion peculiar to the organ in which the cyst is situated.

I cannot help thinking that it is only through the means of direct communication that these cysts obtain the admixture of semen with the fluid which they contain. It has been supposed that a factitious membrane could take on the action of the neighbouring parts, merely in consequence of an extension of the capillary vessels; but I think that much more evidence is yet required to prove the possibility of such a vicarious function; and, as in the examination after death these cystic growths are always found in connexion with some part which secretes or excretes semen, it seems more rational to attribute the presence of that fluid in the contents of the cyst to direct communication. In two or three cases I have met with a modification of the conditions attendant upon what I judged to be encysted hydrocele; and, at the moment, I had some difficulty in understanding the circumstance. The evacuated fluid was straw-coloured and coagulable, like that of common hydrocele; it was, indeed, a serous fluid, whereas that in encysted hydrocele is merely aqueous. This yellow fluid contained spermatozoa. After some reflection, I was led to the supposition that encysted hydrocele was in these cases concomitant with common hydrocele of the tunica vaginalis, and that the cyst had burst spontaneously into the tunica vaginalis. I have lately seen a preparation in the museum of the College of Surgeons which fully explains this apparent anomaly. This is a preparation in which a cyst grew from the anterior superior portion of the testicle, within an hydrocele of the tunica vaginalis.

Having brought my remarks on the subject of hydrocele to a close, a retrospective glance will show that this is not so simple a disease as it is generally considered; that its varieties are very numerous, and that in every one of these there exist some peculiar difficulties of diagnosis; there are many collateral circumstances, also, which interfere with the diagnosis, such as diseases of the parts, either alone or concomitant with hydrocele, as I have pointed out in the course of my lectures. All these difficulties show that, far from being a trifling and easy matter to distinguish and treat hydrocele, it is a disease subject to many perplexing conditions, which render it well worthy the attention of the surgeon.—*Med. Times and Gazette, May* 22, 1852, *p.* 509 ; *June* 19, *p.* 609 ; *and Aug.* 28, *p.* 209,

104.—*Treatment of Varicocele by Cauterization.*—M. BONNET, the eminent surgeon of Lyons, treats varicocele in the following manner. The operator, when the patient is insensible with chloroform, seizes the chord with the four fingers of each hand, and tries to find the vas deferens; as soon as he feels that duct, he allows it to glide back from the veins, and keeps the latter fixed by his fingers. One hand is then made to rest against the inguinal ring, and the other on the testicle, and an assistant is then desired to apply a peculiar kind of forceps on the veins which lie between the operator's hands. This forceps is supplied with two little rods, which produce the same compression as the hands when the latter are taken off, and likewise keep the vas deferens at the back of the veins. When the forceps is properly fixed, a transverse incision is to be made across the veins, about an inch and a half in length, and the soft parts are divided until the veins come into view, the operator taking care not to wound the latter. It is important that all the bleeding vessels, even the smallest, should be immediately tied: three or four ligatures are generally necessary. The whole wound is then covered with a paste of chloride of zinc, which is allowed to stay for twenty-four hours. The paste is taken off on the next day, and the layer of cauterized parts is removed with the bistoury, their thickness being generally about one-third of an inch; and the forceps are then also to be loosened, so that the pressure be not exercised too long. A fresh layer of chloride-of-zinc paste is put on the spot whence the eschar has been removed, and is again allowed to remain for twenty-four hours. At the expiration of this time the forceps is removed, and this concludes the operation.

Eight or nine days afterwards, a white eschar, about an inch square, falls off, and this is found to contain the whole of the veins. The latter may easily be known by the dark blood filling the tortuous convolutions. The pain is very severe for the first two or three days, and there is indeed much suffering until the eschar finally falls off. The scrotum and testicles generally become œdematous and inflamed, but the excitement ceases immediately the cauterized parts are detached. The fever and œdema are mostly trifling; no venesection or any other antiphlogistic means are ever required; as soon as the eschar falls off, the patient is as well as if he had not undergone any operation. He generally may leave his bed a fortnight after the cauterization, and the whole treatment does not last more than one month. M. Bonnet prefers this mode of operating to M. Vidal's subcutaneous ligatures and rolling up of the veins. It must, however, be confessed that the severe pain is a great drawback to M. Bonnet's operation.—*Bull. de Thérap.—Lancet, Sept.* 11, 1852, *p.* 244.

105.—ON THE TREATMENT OF VESICO-VAGINAL FISTULA.

By Dr. J. Marion Sims, Montgomery, Ala, U. S.

The relative position of the fistula has served generally as the basis of a classification. Thus we have:—

1st. The urethro-vaginal, where the fistula is confined to the urethra.

2nd. Those fistulæ situated at the neck of the bladder, or root of the urethra, destroying the trigonus vesicalis.

3rd. Those of the body and *bas-fond* of the bladder, of which, Velpeau says, "there is no fact, up to the present time, which proves indisputably that they have ever been cured."

4th. The utero-vesical, where the opening communicates with the body or cervix of the uterus.

I have never met with one of the last-named class; but of the others I have seen a great variety, embracing almost every possible shape and size.

The position of the patient for the operation, the speculum, the means of vivifying the edges of the fistulous opening, the suture apparatus, and the catheter which I shall describe, are, I believe, original with myself, having been suggested by the peculiarities of individual cases. The final perfection of these mechanical contrivances has been the slow work of experiment.

At the first, I had three cases, upon which I operated about forty times, but failed in every instance to effect a perfect cure, though succeeding so far as to encourage me to persevere. Now, I think I may say that almost every case of this hitherto intractable affection is rendered perfectly curable.

Before detailing my operation, it may be interesting historically to take a brief survey of the surgery of this disease up to the present time.

For the last half century, though surgeons have laboured assiduously to cure it, they have almost always been unsuccessful. Cases have, now and then, been remedied, but they were so few that no general principles of treatment could be established, and, consequently, no certainty of success, in any single instance, could be predicated.

The *suture* was, of course, the first surgical appliance that suggested itself to the mind of operators. It was used in all its various modifications without success. The great difficulty of applying the suture, and its signal failure, caused surgeons to invent a number of instrumental apparatuses, all of which are clumsy and complicated.

As a curiosity, let me here introduce a description of the apparatus of Lallemand, the distinguished professor, of Montpellier:—

"It is composed -1st, of a large canula about four inches long; 2nd, of a double hook, which is moved in the principal instrument by means of a stem, in such manner as to push it out, or to make it enter its sheath; 3rd, of a circular plate which terminates the other extremity of the canula, and which would hinder, if necessary, this latter from penetrating too deep into the urethra; and 4th, of a cork-screw spring, intended to draw forward the small hooks as soon as they are inserted in the posterior lip of the fistula. The canula, being passed into the bladder, allows of our pushing the two small hooks into the vagina through the vesico-vaginal septum, which latter is supported by the left forefinger. By making a turn of the screw, they are kept in this position; a pledget of lint, or fine linen, designed for protecting the tissues, is then placed between the front part of the urethra and the external plate of the canula; finally, we relax the spring which acts then, at the same time, by making traction on the posterior lip with its hooks, and by pressing backwards the lower wall of the urethra, by means of the circular plate, or the lint, which serves as its *point d'appui*. By a mechanism which would be too long for description, we may regulate the stop of the spring in such manner that there will only result from it a moderate degree of pressure, though sufficient for bringing the two borders of the fistula in contact."—(*Velpeau*, vol. iii., p. 852).

The apparatus of Lewziski, of Dupuytren, of Laugier, of Fabbri, and others, are equally complicated, quite as unfit to fulfil the proper indications of treatment, and, by experience, have proved as wholly worthless.

Others have attempted to improve different stages of the operation. Thus Colombat praises his spiroidal needle for passing a whip suture in longitudinal fistulæ, and M. Sanson has proposed to enlarge the urethra by a double lithotome for the purpose of carrying the finger through the urethra into the bladder, merely to depress the fistula toward the vulval opening; while Wutzer proposes, and performs in a great number of cases, the high operation of paracentesis vesicæ, confining his patient for several days on her abdomen, by means of cushions, straps, and buckles.

These are referred to as historical facts, and not for any good that could possibly result from them.

While all these formidable contrivances, and the suture, have failed so signally, *cauterization* has but little more to boast of in the way of success. Very small fistulous openings have occasionally been reported as cured by the application of the nitrate of silver, a catheter being retained in the bladder; but, in fistulæ of any size, it has proved entirely abortive.

To show how utterly hopeless have been all our efforts heretofore, we may allude to a suggestion of some of the French surgeons to apply the Taliacotian method of anaplasty to this operation, which has actually been repeatedly performed by Roux, Jobert, and others; and, also, to the operation of M. Vidal, for an "obturation of the vulva," whereby the bladder and vagina became a grand compound receptacle of the urine and menstrual secretion. It is an idle waste of time to dwell longer on means so perfectly ineffectual, not to say mischievous.

But have no useful, practical suggestions been made, as yet, by any one on the treatment of vesico-vaginal fistula? Yes: two names stand out in bold relief amongst those who have devoted some time and attention to this subject. I allude to our own countryman, Mettauer, who uses leaden sutures; and to the indefatigable Jobert, who is the author of the operation of *autoplastie par glissement.* The first, by his plan, has cured several cases; while the latter has achieved a greater degree of success than any other surgeon.

Thus, all that we know on the subject worth knowing is due to America and France; while German and British surgery have done comparatively nothing for the amelioration of this loathsome and troublesome disease.

Many of our systematic works pass it over in silence, or dismiss it with a few remarks discouraging all attempts at treatment. Samuel Cooper, in his great 'Surgical Dictionary,' does not introduce the subject even by name; while Liston devotes less than a page to it. Alluding to the application of the heated wire, he says: "By this means a small opening may occasionally be made to heal up. But when the communication is to a large extent, but little hope remains to the patient." Fergusson, Gibson, and others say nothing about it; while Miller dismisses it as summarily as did Liston. But how could it be otherwise, when its mechanical treatment is so imperfect that no general principles could be laid down?

It is not my intention to allude to all that has been attempted by different surgeons; but it is equally a duty and a pleasure here to chronicle what has been done by our own countrymen who lay any claims to originality and credit.

The first successful case in this country is, I believe, by Dr. Hayward, of Boston. The following is his description of the operation:—

"The patient was placed on the edge of a table, in the same position as in the operation for lithotomy. The parts being well dilated, I introduced a large bougie into the urethra, and carried it back as far as the fistula. In this way I was able to bring the fistula downwards, so that the opening was brought fairly into view. The bougie being then taken by an assistant, I made a rapid incision with a scalpel around the fistula, about a line from its edges, and then removed the whole circumference of the orifice. As soon as the bleeding, which was slight, had ceased, I dissected up the membrane of the vagina from the bladder, all around the opening, to the extent of about three lines. This was done partly with the view of increasing the chance of union, by presenting a larger surface, and partly to prevent the necessity of carrying the needles through the bladder. I then introduced a needle, about the third of an inch from the edge of the wound, through the membrane of the vagina, and the cellular membrane beneath, and brought it out at the opposite side, at about an equal distance. Before the needle was drawn through, a second and a third were introduced the same way; and these being found sufficient to close the orifice, they were carried through, and the threads tightly tied. Each thread was left about three inches in length."—(*Am. Journal Med. Sciences,* Aug. 1839.)

Besides this case, Dr. Hayward has recently reported eight others, operated upon since August, 1840, two of which were entirely successful. He says:

"The operation was done in every instance by ligature. The result has, on the whole, been satisfactory. Anything that is calculated to remove this infirmity, or to lessen in the slightest degree the sufferings of the individuals who are afflicted with it, should be made known.

"I had never seen the operation done until I did it myself, nor could I find any description of the mode which others had adopted, that was sufficiently clear and explicit to be of much service. I had, therefore, to take such a course as I thought safe, and at the same time likely to effect the object, viz. the closure of the fissure. I do not know that others may not have operated precisely in the same way; but if they have, I am not aware of it.

"I performed the operation twenty times, but it was done on nine patients only, one being operated on six times, another five, two twice, and five once."—(*Boston Med. and Surg. Journal,* vol. xliv., No. 11. April 16, 1851.)

Dr. Pancoast, of Philadelphia, has operated successfully in two cases, by the following method:—

"The peculiarity of the operation consists, virtually, in attaching the two sides of the abnormal opening firmly together, on the principle of the tongue and groove, so as to get four raw surfaces in contact, and thus increase the probabilities of union by the first intention. For this purpose it is necessary that the margins of the fistula should have considerable thickness, and when not found in this state, they are to be thickened by repeated applications of lunar caustic; or, better still, of the actual cautery.

"Having exposed the fistulous orifice as thoroughly as possible with a Charrière's speculum, from which the sliding blade has been removed, an assistant at the same time drawing the vestibulum well up towards the front of the pubis, my first object in the operation is to split the most posterior margin of the fistula to the depth of half an inch. I next pare off the edges of the other lip of the fistula, so as to bring it into a wedge shape; first reversing it as much as possible with a small blunt hook, and trimming off the mucous membrane on the side next the bladder with the curved scissors or scalpel, and then detaching, in like manner, the vaginal mucous membrane, to the breadth of three-quarters of an inch, along the whole extent of the lip. This was a very difficult but most important part of the process. Having checked the bleeding by the use of astringent applications, my next object is to insert the raw wedge or tongue, into which one of the lips of the fistula has been converted, into the groove which has been cut in the other, and hold them in close connection. This I accomplish by the means of a peculiar suture that might be called the plastic, and in the same way that I have described its application in reference to some plastic operations in my 'Operative Surgery;' and in the 'American Journal of the Medical Sciences' for October, 1842.

"When the sutures are knotted firmly, the tongue or wedge will be found immovably imbedded in the groove. The sutures I leave for two weeks or more, or until they become loose. A gum catheter should be kept in the bladder to prevent the accumulation of urine. To keep the inflammation from running to a destructive height, a bladder of cold water should be applied for thirty-six hours to the vulva.

"On the second or third day, I direct the frequent injection of a solution of zinci sulph. into the vagina, in order to increase the tone of the parts. On the fourth or fifth day, I apply to the line of union a solution of lunar caustic with a camel's hair pencil. This application should be made twice in the twenty-four hours, the solution being gradually increased in strength. Union by first intention may be expected to take place under this treatment to a considerable extent; at such points as it should fail to occur, union by second intention is to be promoted by the use of lunar caustic in substance, so as to raise a bed of granulations on the raw surfaces of the lips, while they are held in contact by the plastic suture.

"In one case, there was a complete destruction of a cross section of the whole urethral structure, near the neck of the bladder; in the other, there was an elongated orifice in the *bas-fond* of the bladder, which would more than admit the end of the finger."—(*Med. Examiner*, May, 1847.)

Dr. Mattauer's operation, the peculiarity of which consists in the use of leaden sutures, is described in the 'Am. Jour. Med. Sciences' for July, 1847, to which I beg leave to refer the reader for particulars.

Having thus briefly alluded to what has been done, up to the present time, for the treatment of this affection, I shall now proceed to detail my own operation.

I conceive that I may claim originality: 1st. For the discovery of a method by which the vagina can be thoroughly explored, and the operation easily performed.

2nd. For the introduction of a new suture apparatus, which lies imbedded in the tissues for an indefinite period without danger of cutting its way out, as do silk ligatures.

And 3rd. For the invention of a self-retaining catheter, which can be worn with the greatest comfort by the patient during the whole process of treatment.

Of the position of the patient for the operation.—With the exception of Velpeau and Chelius, all other operators, even Jobert, recommend that the patient be placed on the back as in the operation for stone.

Velpeau says, "a round-shaped mattress is placed under the *belly*, in such manner as to enable her to keep her thighs flexed, *while lying upon her abdomen*. An assistant keeps the vagina dilated by means of a large gutter of metal, horn, or thin wood."

Chelius directs "the patient to be placed on her *belly* upon a table covered with a mattress, so that she may kneel near its edge, with her head and chest bent forwards, and supported with small bolsters. The operator sits between the patient's thighs, upon a seat of proper height so that his arms should not soon tire."

In 1845, previously to the translation of either Velpeau or Chelius, I hit upon the proper plan of exploring the vagina in these cases; but to the latter is due the first published account of even a hint towards that method.

In order to obtain a correct view of the vaginal canal, I place the patient upon a table about 2½ by 4 feet, on her knees, with the nates elevated, and the head and shoulders depressed. The knees must be separated some six or eight inches, the thighs at about right angles with the table, and the clothing all thoroughly loosened, so that there shall be no compression of the abdominal parietes. An assistant on each side lays a hand in the fold between the glutei muscles and the thigh, the ends of the fingers extending quite to the labia majora; then, by simultaneously pulling the nates upwards and outwards, the os externum opens, the pelvic and abdominal viscera all gravitate towards the epigastric region, the atmosphere enters the vagina, and there, pressing with a weight of 14lbs. upon the square inch, soon stretches this canal out to its utmost limits, affording an easy view of the os tincæ, fistula, &c.

To facilitate the exhibition of the parts, the assistant on the right side of the patient introduces into the vagina the lever speculum, and then, by lifting the perineum, stretching the sphincter, and raising up the recto-vaginal septum, it is as easy to view the whole vaginal canal as it is to examine the fauces by turning a mouth widely open, up to a strong light. This method of exhibiting the parts is not only useful in these cases, but in all affections of the os and cervix uteri requiring ocular inspection. The most painful organic diseases, such as corroding ulcer, carcinoma, &c., may be thus exposed without inflicting the least pain, while any local treatment may be instituted without danger of injuring the healthy structures. By this method, also, a proper estimate, anatomically, can be had of the shape and capacity of the vagina; for where there is no organic change, no contraction, and no rigidity of it from sloughs, ulcers, and cicatrices, and where the uterus is movable, this canal immediately swells out to an enormous extent, thus showing its great expansibility.

Fig 1.

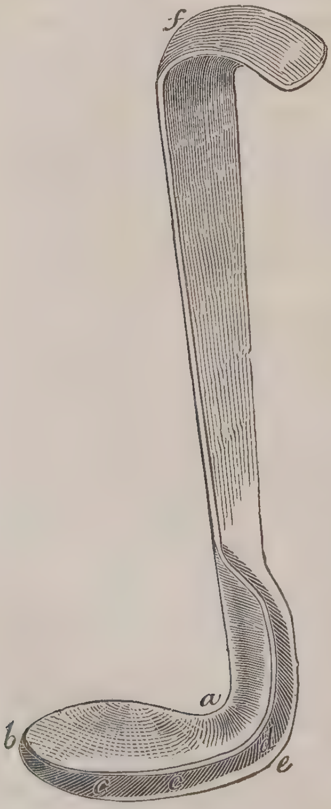


Fig. 1 represents the speculum. When introduced and held properly, it causes no pain whatever. It is well enough to have two or three of different sizes, so as to be prepared for any case. The one ordinarily used by me is about 2½ inches from *a*, where it supports the sphincter, to its terminal extremity at *b*. Its concavity *c c*, serves to reflect a strong light on the vagino-vesical septum, the seat of fistula. Its breadth from *d* to *e* is about ⅞ths of an inch, widening a little as it approaches the end, making it somewhat in the shape of a duck's bill. The handle is made strong and unyielding, because a considerable degree of leverage has to be exercised by it. The curve at *f*. being cushioned to prevent its hurting the forefinger, fits accurately over it. The whole instrument is made of German silver, the concavity being highly polished for reflecting the light.

A small, slightly convex spatula (of German silver), may occasionally be needed to press the urethra downwards against the symphysis pubis, when there is a very minute fistula in the neighbourhood of the trigonus vesicalis; particularly if the urethral folds are very redundant. This will seldom be used, but it is sometimes indispensable, not only in exploration, but in holding the healthy parts out of the way in passing sutures.

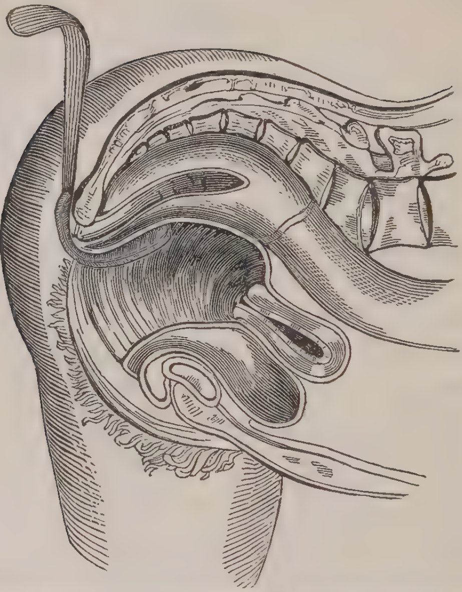
These simple instruments, with this position and a good light, are all that are necessary for obtaining an accurate view of the parts. If the vagina and outlet are ordinarily capacious, a good strong northern light, of a clear day, from a large solitary window, is all-sufficient. But if this canal has been narrowed by cicatrices after extensive sloughs, or from other causes, then sun-light is absolutely necessary for every stage of the operation from first to last. For this purpose a small table is placed near a window admitting the sun-light. An assistant, sitting by, adjusts on the table a glass, some eight or ten inches in diameter, so as to throw the rays of light into the vagina, which, passing to the right of the operator, and striking the concave surface of the bright speculum, are reflected down on the anterior vaginal parietes, making everything perfectly distinct.

Fig. 2 shows the speculum introduced, elevating and supporting the sphincter; also the relative position of the organs, when the patient is examined as directed; the vaginal canal being distended to its greatest capacity.

Of scarifying the edges of the fistulous opening.—This was the most tedious and difficult part of the operation with me, as it has always been with others. For three or four years, I had great trouble in getting such instruments made as I thought indicated; but those I now use for this purpose are so simple, that they can be had anywhere. A delicate tenaculum and a sharp-pointed knife are alone necessary.

The tenaculum is very small; the curve being at right angles with the shaft, and not more than one-third of an inch long. If longer, it is not easily managed, nor so generally applicable to any and every part of the fistula. The shaft, some five or six inches long, is set into a firm handle. Of this size and shape, it can be used to elevate the edge of the opening with equal facility, whether laterally or otherwise; while, if curved at more than a right angle, it can be useful only in hooking up and drawing forward the anterior and posterior margins.

Fig. 2.



[By means of the tenaculum the edge of the fistula is elevated, an the part is separated by the knife so held up. The process is continue until the edge of the opening is well vivified all round.]

The denudation is to be from a quarter to the third of an inch wide I have often made the mistake of not removing enough of the callou edge; but I now take good care to remove it freely, extending the scarification up on the vaginal surface. I do not remove any of the linin membrane of the bladder, unless it is very much altered in characte and projects through the fistula into the vagina in such a way as to obstruct the easy performance of the operation; which rarely happens, an only where there is a great loss of substance.

Where the fistula is very small, say not larger than a common-size probe, or even as small as a number seven or eight sewing needle, th best plan to scarify is, to hook up the part with the tenaculum, pull i forward, and by a thrust of the knife transfix the entire thickness of th vagino-vesical septum; then by a circular sweep of the instrument, th whole fistulous track may be removed at once; which substitutes for th small and callous opening, a smoothly cut orifice of rather a conica shape, large enough to admit the end of the forefinger.

Where the fistula is so small, there is always an abundance of tissue, and there need be no fear of removing the parts freely; for it is easier to close properly an opening as large as the end of the finger, than a smaller one, provided there is no scarcity of texture.

Where the fistula, on the other hand, is very large, there is occasionally some trouble in determining exactly what to cut; because by the bearing down, sobbing, straining, or even voluntary resistance of the patient, the mucous membrane of the bladder may be forced out in voluminous folds, so as to render the fistulous edges indistinct, and there is danger of scarifying, either too high up on the vaginal surface, or too far in on the vesical lining. To obviate this difficulty, a properly curved metallic bougie may be passed through the urethra up to the fundus of the bladder; thus putting the parts on the stretch and carrying back into its cavity, the apparently redundant lining. The bougie curved down between the thighs may be held by a third assistant. But I greatly prefer to introduce a bit of soft sponge, of proper size, into the cavity of the bladder, which forces back the lining membrane, leaving the fistulous boundary distinct, when the scarification may be easily accomplished. The introduction of the sponge into the cavity of the bladder, or merely between the edges of the fistula, as well as its removal, is always attended with very great pain. Once introduced, I allow it to remain, till the sutures are passed and ready to be secured.

During the scarification, there is, of course, always hemorrhage; and, in some instances, it is so profuse as to compel us to desist for a short time, the patient being allowed to change her position and rest. As soon as the bleeding ceases, the operation may be resumed.

To remove the blood from the cut surface during the scarification, a probang is necessary, which is made by tying a nice bit of sponge to the end of a piece of whalebone some eight or ten inches long. It is well enough to have two or three of these, which will keep one assistant pretty busy to wash clear of blood at this stage of the process. The probang can generally be best applied by the operator, as his position allows him to see exactly where it is most needed.

I cannot lay too much stress on the great necessity of perfecting well this part of the operation; for upon a proper and free denudation of the fistulous orifice, success or failure will mainly depend.

Sometimes one edge of the fistula is thinner than another. Velpeau and others have noticed this fact; but in not a single instance have I found (as they did) the thinner edge behind and the thicker before. Where there was any appreciable difference, the reverse was the fact in every case that I have as yet examined. This thinning of the anterior edge, where it was right at the neck of the bladder, was always a serious obstacle to the proper closure of the fistula. By giving way too soon, it almost invariably left an opening at the point of its greatest thinning. This, however, is a peculiarity belonging to individual cases, and will be dwelt on more particularly when we come to describe them.

Of the Suture Apparatus.—Sutures all serve the same general purpose, viz. the bringing and holding together parts that we wish to unite. They are variously named, according to circumstances—as the Interrupted, because it is solitary; the Continued, because a plurality of them are joined together; the Quilled, because of the peculiar method of securing it; and the Twisted, for a similar reason.

The one that I use for closing vesico-vaginal fistulæ, I have termed clamp suture, from its peculiar method of action. Thus, if the profession allow me to introduce a new suture by its most appropriate name, we shall then have in general use, sutures named, first, according to their relation, the interrupted and continued.. Second, according to the method of securing them, the quilled and twisted; and third, according to its method of action, the clamp suture.

As all sutures are but modifications, one of another, so is the clamp a modification of the quilled.

The clamp suture is composed of small annealed silver wire fastened to cross-bars, after the manner of the quilled suture. The wire is drawn down to about the size of a horse-hair, and then annealed. The cross-bars, or clamps, are very small, not more than a line in diameter, and made of silver or lead, as most convenient. If of silver, they may be tubular; when of lead, solid. They must be highly polished, and without the slightest asperity, particularly at their extremities. They act as clamps in this way. The parts embraced between them, being held in close apposition, swell upward, and overlap them; while they, by pressure, produce an ulceration in the vaginal surface, sufficient to allow of their being perfectly embedded, and after a while even sometimes hidden from view. This ulcerative process is attended, of course with a purulent discharge, which, continuing for three or four days, diminishes, and soon ceases altogether; but not till the bed made by the clamp becomes lined with mucous membrane. After this the apparatus would lie innocuously in the tissue for an indefinite period. I have allowed it to remain long enough for the extremities of the clamps to be covered over completely by firm granulations, which, opposing considerable resistance to their removal, had to be lacerated before this could be accomplished.

This suture is far preferable to anything before suggested for the purpose. Its introduction dates from June, 1849, since which time I have had comparatively little trouble in the treatment of the great majority of cases of vesico-vaginal fistula. Properly applied, this suture never ulcerates out, having always to be removed by means of scissors, hooks, and forceps. It may be allowed to remain intact for six, eight, or ten days, or even longer. If removed too soon, the delicate cicatrix may gradually yield to the traction of the ascending uterus, or to the force exerted by the bladder in expelling its contents, and thus reproduce a small fistulous orifice to be closed by a subsequent and more cautious operation. I have seen the new cicatrix give way from another cause, and perhaps it is the chief one. The clamps, burrowing in the vaginal surface, leave a deep sulcus or fissure on each side of the new cicatrix, which, when they are removed too soon, fill up by granulation. It is a law of all granulating wounds to contract as they heal, and this contraction on each side of the new cicatrix is often sufficient to pull it gradually apart. But if the clamps are allowed to remain till their sulci are covered with mucous membrane, then there is no danger of this accident, for these chasms then gradually disappear, less by filling up with granulations, than by an absorption of their elevated edges.

Accidents of this sort have happened repeatedly in my hands, from a too early removal of the suture apparatus. Great judgment, which experience alone can give, is necessary to determine the length of time that the sutures ought to remain intact, for no positive rules can be laid down that will answer invariably in every case.

I have also seen serious mischief result from leaving the clamps too long embedded in the parts. Their burrowing and ulceration may extend entirely through the vagino-vesical structure, thereby substituting new fistulous openings for the original one. This complication is by no means incurable, but only prolongs the treatment, and postpones ultimate success.

In two or three instances I have witnessed a still more serious accident from an undue pressure of the clamps, viz. a strangulation of the enclosed fistulous edges, which unfortunately resulted in a sloughing of the tumefied parts, and a consequent enlarging of the opening. In no instance, however, has this accident rendered the case hopeless, or even caused me to feel any concern either for the immediate safety of the patient, or for ultimate success in treatment.

After the scarification is completed, the patient is allowed to rest for a few minutes, before the introduction of the sutures; an operation somewhat tedious, but not difficult. The number of sutures will depend on the size of the fistula. Less than two will not suffice for the smallest opening; while the great majority of cases will require three; and, occasionally, we meet with one sufficiently large to demand four.

The needle which I use is awl-shaped, and spear-pointed, with the eye near the point. The shaft is about six inches long; the part near the handle is made malleable, allowing it to be bent into any desirable shape for the purpose of preventing the hand, as it grasps the handle, from obstructing the view of the operator.

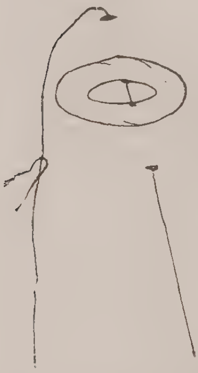
To illustrate the method of suture, let us suppose a case, where the fistula is oval, transverse, occupying the *bas-fond* of the bladder, about half way between the urethra and os tincæ, in the mesial line, and large enough to admit the end of the index finger. This, in shape, size, and position, is altogether the most favourable case that can occur, both for a neat performance of the operation, and for certainty of success. Such a fistula will require three sutures.

The middle one is first applied. The needle armed with a silk thread, is entered about half an inch anterior to the scarified edge of the fistula; pushed deeply into the vesical septum, without transfixing it; brought out just at the edge of the mucous lining of the bladder; carried across the opening; made to enter the opposite side at a point corresponding with its direction anteriorly, observing the same precautions in its course; while it is brought out on the vaginal surface about half an inch beyond the scarified part.

The passage of the needle through the anterior edge of the opening is easy enough; but the loose and yielding nature of the posterior, renders some support necessary before it can be made to appear on the vaginal surface. For this purpose a blunt hook is placed flatwise, just beyond the spot at which we intend the needle to come out, thus making a fixed point for it, when it passes with great ease.

[As soon as this has been done, the blunt hook may be laid aside, and the ligature, which lies close by the side of the needle, may be hooked up by the tenaculum. If the light is not good, or the parts contracted, this is not always easy. In this case, the needle should be pushed one-fourth of an inch further on, and then retracted, by which means a loop will be formed, into which the tenaculum can be easily passed. The needle may be now withdrawn, leaving the two ends of the ligature hanging from the vulva. The other ligatures may be passed in the same manner. As great cutting and pain would be experienced on pulling the distal end of the ligature, this may be prevented by passing up a crescent-shaped fork, mounted on a shaft of convenient length, which, pushing the ligature above its furthest point of exit, serves the purpose of a pulley. By this means the ligature can be drawn backward or forward without any pain to the patient.]

FIG. 3.



Having now given directions for passing the ligatures, let us suppose that we have introduced the three, or as many as we want. The difficult part of the operation is over, and we have only to substitute the annealed silver wires for the silk ligatures; which is the work of but a few minutes. Take a piece of the wire twelve or eighteen inches long, making a small crook at one end so as to fasten it securely to one of the ligatures. Fig. 3 shows the wire crooked and hanging to the end of the thread; the other end of the thread being pulled on till it comes out, leaving the wire in its place. In the same way replace the remaining silk ligatures with silver wire; both ends of which project from the vulva, the proximal directed downward, and the distal held upward.

The next step is to secure them by means of the clamps. In Fig. 4 the wires are represented passed, the two ends of each brought out of the vulva; the distal *a a a*, to the left; the proximal *b b b* to the right. The distal ends are passed through small oblong holes made in the silver or leaden bar *c* to suit the distances between the points of suture at *d d d*. The wires may be fastened to the bar or clamp *c*, by being turned twice around it, or by being passed through a perforated shot and bent over it. This done, we now pull upon the proximal ends *b b b*, and, as a matter of course, the bar *c*, is carried into the vagina, up above the fistula, and made to occupy a bed right over the orifices *d d d*. Here, the crescent-shaped fork is supplanted by a modification of it, broad enough to serve the purpose of a pulley for all three of the wires. The next step is to pass another bar or clamp on the proximal ends of the wires, and to push it along them into the vagina, till it occupies a position in front of the fistula, corresponding exactly with the one behind it.

Fig. 4.

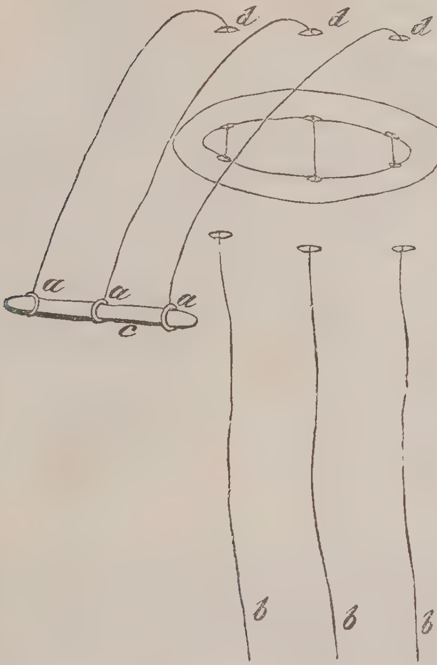


Fig. 5 shows the two clamps, one on each side of the fistula, and everything ready for closing it. The proximal clamp is pushed up by the crescent-shaped fork, while the wires are held firmly. This brings the denuded edges of the fistula into such close contact that it would be difficult to enter a common sized probe between them. The force necessary for tightening the clamps will depend upon the judgment of the operator; not enough will allow the parts to gape; while too much, which is the most frequent fault, will produce the bad effects formerly alluded to.

A simple and perfect contrivance now serves to hold the clamps in their proper places. A small bird shot, perforated, is passed along each wire close against the proximal clamp; when, the wires being held securely, they are gently but firmly compressed by means of a long strong pair of forceps, whereby they are made to perform the office of a

Fig. 5.

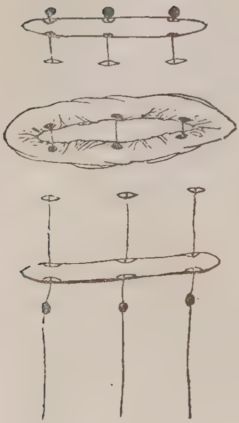
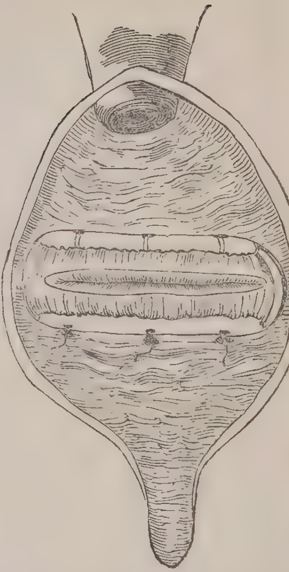


Fig. 6.



knot in preventing the clamp from slipping off the wire. The wires are cut off about a fourth or eighth of an inch from the shot, and then bent over, which effectually prevents their slipping off.

Fig. 6 shows the appearance of the fistula and suture apparatus after the operation; the edges of the opening in apposition; a clamp on each side of it; the flattened shot against the proximal clamp; the wires cut off and bent over the shot, which protects the recto-vaginal surface against their sharp ends, as well as prevents their slipping.

The operation, which may have lasted some twenty or thirty minutes, or, under any circumstances, not more than an hour, is now over; and our patient is ready for bed, complaining only of fatigue from the constrained position.

There is one peculiarity about the instruments, which greatly facilitates the operation. For instance, the tenaculum, the needle, the blunt hook, and the crescent-shaped fork, have their shafts made malleable, so that they may be bent in a direction to keep the hand of the operator below the axis of the vaginal canal, which preserves the line of vision unobstructed.

Of the Catheter.—Surgeons have always felt that something more was necessary to cure a case of vesico-vaginal fistula than merely closing it mechanically. The urine has been the great cause of failure. To prevent its percolation through the closed opening has been regarded, heretofore, as almost insuperable. The catheter was tried by all, but its frequent introduction had a direct tendency to disturb the healing process, and to hasten the mischief it was intended to obviate; while all attempts to secure it permanently in the bladder by any external contrivance has proved abortive.

Desault used a large gum-elastic catheter, "fixed to an apparatus resembling a truss, by means of a movable silver plate, provided with an aperture for its removal." Tying it to the hairs of the vulva, and other equally useless expedients have been resorted to.

According to Chelius, the operation of paracentesis vesicæ was practiced by Wutzer, who, he says, had the greatest success in the treatment of this disease, having cured three cases out of eighteen. He compliments the efforts of his countryman by saying, "That he has importantly contributed to perfecting the operation, and, by the addition of paracentesis vesicæ, in order more completely to draw off the urine, has advanced considerably farther than his predecessors."

Wutzer gives specific directions for puncturing the bladder above the pubes: after which a tube is to be introduced, and "fixed immovably by means of wing screws in the cleft of a previously well fitted belly girdle, after which, the patient should be carefully conveyed to a bed previously prepared, *placed on her belly, upon suitably cut out leather cushions, and properly buckled in it with suitable leather straps.*" I allude to this method of Wutzer, merely to show what desperate efforts have been made to prevent the urine from escaping through the fistula during the process of treatment.

With me, as with others, this has been the most serious obstacle to the success of the operation; for, if a single drop of urine finds its way through the fistulous orifice, it is sure to be followed by more, and thus a failure to some extent is almost inevitable.

Knowing that something to draw off the urine continually was absolutely indispensable to success, and seeing that all other operators had failed to secure a catheter in the bladder by any justifiable external means, I conceived the idea of contriving for this purpose, a self-retaining instrument. A sponge tent was the first thing suggested to my mind. I supposed, if a long narrow piece of sponge could be safely introduced into the bladder, that it would absorb the urine as fast as secreted, which, by capillary attraction, would pass along the sponge, and escape without coming in contact with the fistula. Accordingly a piece of fine sponge some three or four inches long, narrow in the middle, larger at each end, with a strong silk thread passing through its whole length to prevent its being torn, or broken, was first used. Concealed in a bi-valve catheter, it was readily introduced, the middle portion enveloped in gold beater's skin lying in the urethra, the small flat end occupying the cavity of the bladder, while the larger extremity hung out between the labia. It acted the part of a syphon admirably, every drop of urine passing through it; but unfortunately for my patients (two of whom were experimented on with it), it became encrusted and perfectly saturated with calculous deposits, rendering its removal painful, difficult, and even dangerous. This expedient, promising so much in theory, and performing so ill in practice, was necessarily abandoned.

Following up the idea of a self-retaining apparatus, I next hit upon the following contrivance. I took a piece of gum-elastic bougie (No. 5 or 6), some four or five inches long, and made a longitudinal split an inch long entirely through it, beginning about a fourth of an inch below the rounded end. A piece of silver wire, a little longer than the catheter, was passed along it and fastened neatly at its vesical or split extremity. Traction on the lower end of the wire caused the sides of the split to open, which allowed the urine to pass off freely, while the bulging held it securely in the bladder. This seemed, at first, to promise success, but after trying it in various cases for about twelve months, it, like its predecessor the sponge, had to be laid aside. There were several reasons for its failure. If made of a larger catheter than a No. 5 or 6, it would not open and close with regularity, and hence, would press unequally and injuriously on the fistula; whereas, when made of a No. 5 or 6, its calibre was not large enough to permit a free discharge of the mucopurulent secretion which always attends the use of silken sutures; and this compelled its removal, at least two or three times a day, for the purpose of cleaning it out. Hence, its frequent introduction, with the consequent disturbance to the parts from the opening and shutting of the split end, interfered with the healing process to such an extent as to make it necessary to give up its use entirely.

Foiled in this, I devised another instrument on the self-retaining principle. It was a large silver catheter, curved in opposite directions, giving it a sigmoid form. The end was carried up behind the symphysis pubis, the middle part lay in the urethra, while the extremity hung down between the nates.

This was the first successful approximation to what was really wanted. When the patient lay on the back, the outer end was lower than the base of the bladder, which made it literally a syphon; when she turned on either side, it had a semi-rotation that still kept the internal end upward, while the outer extremity hung downward over the thigh, inviting the easy passage of the urine.

To insure a free discharge of the muco-purulent secretion along with the urine, I made a long narrow slit on each side instead of the holes. To see how the instrument would answer, I introduced it into the bladder of a patient having a very large fistula. Feeling well satisfied with its performance, I attempted to remove it and found it impossible to do so. Folds of mucous membrane had projected into the fenestra, and thus locked it up in the bladder: they were disengaged by the finger passed up through the fistula. The two long openings were then closed and several round ones made. They were larger than in ordinary catheters, on account of the abundant tenacious secretion before alluded to.

I operated on a case, and applied what I then supposed to be a faultless instrument. Everything progressed well for five or six days, the catheter remaining in the bladder intact for that length of time; but now it became necessary to remove it for the purpose of cleaning out the mucus and urinary concretions that were obstructing the free egress of the water. But here I was foiled. I could pull it down for, perhaps, an inch, when it suddenly stopped; then by letting it go, it would slip back into the bladder with a sort of jerk. It evidently seemed to be fastened there by some means that I could not exactly comprehend. Every reasonable effort to remove it proving abortive, I, at last, pulled it out by main force. On its removal, the secret of its retention was explained by the shreds of mucous membrane (some an inch long) hanging from each orifice on the under and lateral surfaces of the catheter. The long-continued presence of an instrument in the urethra, which was entirely too large for it, irritated and inflamed the lining membrane, and caused it to throw out granulations. These, with the granulations of the fistula, shot little granules through the holes in the catheter, which spread out into button-shaped knobs on its inner surface, thereby preventing its removal. The injury done to the part, and the pain inflicted on the patient, may very well be imagined.

This instrument was variously modified (always keeping in view the self-retaining principle); but it was not reduced to its present simple form until about three years after this. I will not detain the reader longer with a statement of the troubles and disappointments that were encountered before I got it perfected, particularly as it will be necessary, in giving the history of individual cases, to speak of these amongst the causes of failure in some of the operations.

The urethra in some women is less than an inch long, while in others it may be an inch and a half; besides, it may be so small in some, that a No. 5 catheter is as large as can be borne with any degree of comfort, while others will take a No. 9 or 10, and retain it easier than one smaller. Thus, it is evident, that almost every case may require its own catheter, peculiar in length, diameter, and curvature.

Fig. 7.

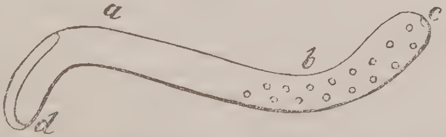


Fig. 7 is a correct representation of the self-retaining catheter, and exactly of the size and shape that is most generally required. It may sometimes be curved a little more. The end *c* is introduced and lodged up behind the symphysis pubis; the part from *a* to *b* lies in the urethra; while the outer extremity *d*, hangs down immediately below the meatus urinarius; this downward projection at *d* serves the double purpose of preventing it from slipping into the bladder, and of preserving its parallelism. If this part is too straight, running in the direction of the axis of the main channel from *a* to *b*, the instrument, after a few hours' use, will revolve on its own axis, and the end *c* may be turned to one side, or even so far round as to impinge on the fistulous opening. Should this accident happen, the instrument is not well suited to the case. It is either too long, too short, too crooked; or, what is more likely, not curved down enough below the meatus.

When well fitted to the case, it can be worn with great ease to the patient; and never turns, nor slips out, it matters not whether she lies on the back or side. It is perfectly self-retaining, being held in the bladder by an internal pressure against the symphysis pubis, and by an external pressure on the outer end exerted by the labia overlapping it, and hiding it entirely from view. The holes should be small, about as represented in the drawing.

Thus, I have, as briefly as possible, described the mechanical apparatus absolutely necessary for the successful treatment of vesico-vaginal fistula.

Of the after-treatment.—The operation finished, the patient is placed in bed, and the catheter introduced into the bladder. A moment will suffice to show the urine leaking from its outer extremity.

A large anodyne should now be given, such as morphia, laudanum, paregoric, or whatever we may know will best agree with the patient. The bowels are to be kept perfectly quiescent, till the success or failure of the operation is ascertained. I have often kept them locked up for three and four weeks without any bad consequences whatever to the general system. In but two instances, that I recollect, have I ever permitted them to be opened under ten or fifteen days from the time of the operation. This is very easily done. Previously to the operation some light laxative medicine must be given: after it, the diet must be of a constipating character. I generally direct my patients to live on tea and crackers, allowing coffee if preferred, and prohibiting meats, fruits, saccharine substances, and all articles of food made of Indian, or common corn meal. Formerly, I allowed as little water as possible; but latterly, since the introduction of silver sutures, and the perfection of the catheter, I have not thought its interdiction necessary. To assist the diet in producing constipation I order some form of opium in as large doses as can be borne, at least twice in the twenty-four hours. Old fistula cases are generally used to opium; and where they are not, they soon learn its beneficial effects. It calms the nerves, inspires hope, relieves the scalding of the urine, prevents a craving for food, produces constipation, subdues inflammatory action, and assists the patient, doomed to a fortnight's horizontal position, to pass the time with pleasant dreams, and delightful sensations, instead of painful forebodings, and intolerable sufferings.

There is not the least necessity for the patient's assuming the erect posture, even for a moment: thus, by diet, opiates, and quietude, a perfect state of constipation can be kept up as long as we could possibly want it in any case. All this facilitates the healing process, which is effected by the "first intention;" or, if it fail, it does so only at one or two points, which may be subsequently closed.

The catheter is to be removed as often as necessary to keep it clear of concretions and mucus, which, in a few cases, may be twice a day; in some, once; while in others, it may be allowed to remain two or three days, or even longer. It is to be carefully watched, and must not be permitted to remain long enough to become obstructed. I have seen a failure result from a neglect of this precaution.

The patient's comfort is greatly promoted, by washing the vulva opening twice a day, or oftener, with warm or cold water, as may be preferred.

For this purpose a common bed-pan is placed under the nates, as she lies on the back: when the water may be thrown into the os externum, over the mons, vulva, and inguinal regions, by means of a syringe holding some six or eight ounces. The water has sometimes to be thrown with considerable force to remove the urinary deposits from the nates and genitals.

The patient may lie on the back, or on either side, changing her position whenever she pleases; but in no instance is she allowed to raise herself up in bed.

Some women are more cleanly than others in protecting themselves and clothing from the urine. Most of them prefer old cloths to absorb it, which are changed as frequently as necessary for comfort.

On the third or fourth day after the operation, I usually examine the sutures to see if all is right. This must be done with as little exertion on the part of the patient as possible. On the sixth or seventh, I examine them again, and if they are doing no mischief, it is much better not to remove them till the ninth or tenth day. The removal of the clamps is occasionally troublesome, but by a little care it can be done with sufficient ease to both patient and operator. The flattened shots are first clipped off, then by a blunt hook, the anterior clamp is readily elevated from its bed and removed; after which, the posterior one, with the wires attached, may be hooked up, pushed backwards, disengaged entirely, and then lifted out with the forceps.

This accomplished, place the patient in bed again, and continue the use of the catheter, with the recumbent position, for several days longer, to prevent any strain or traction on the delicate new cicatrix.

By allowing the patient to get up too soon, and evacuate the contents of the bladder spontaneously, there is danger of rupturing the cicatrix, but by persevering with the catheter and position, till it has time to become well organized, there is no danger. This will take usually fifteen days from the performance of the operation.

In other parts of the body, most surgeons have witnessed the sudden disruption or gradual yielding of a freshly cicatrized wound, which had been submitted to undue motion, or too strong distention. A case of this kind recently occurred in my practice. A negro woman, aged 27, had a small tumour on the dorsal aspect of the right thumb, involving the skin. It was removed by two transverse elliptical incisions; the edges of the wound were brought together and dressed with collodion, while the thumb was bandaged to a straight splint to prevent any motion in the joint or traction on the cicatrizing wound. It healed by the first intention; the dressings were removed on the seventh day, but the splint was continued on the palmar aspect of the thumb for seven days longer. It was then laid aside, as I supposed the cicatrix to be strong enough to resist the flexure of the thumb. Everything went on well for three or four days longer, when the patient, who was a cook, suddenly lifting a boiling pot from the fire, was alarmed by the snapping asunder of the cicatrix on the back of the thumb, which made a noise so loud as to be heard all over the room. The cicatrix had burst open through its whole extent; the blood flowed freely and the woman was greatly frightened. It was dressed precisely as before; it healed up as kindly; and by preserving the same precautions for a longer time, the cicatrix remained permanently organized, the skin in the neighbourhood yielding, and accommodating itself to the motions of the thumb as perfectly as it ever did before any loss of tissue. If such an accident as this can occur after eighteen days of cicatrizing, we need not be surprised at the gradual or sudden yielding of a cicatrix in the vagino-vesical structure in a shorter space of time.

I have now completed what I have to say in a general way on the subject of the operation for vesico-vaginal fistula. It remains to detail individual cases, which will prove the curability of the disease, and also illustrate the varieties and complications to which it may be liable. The cases that occurred to me early and which were given to me for the sake of experiment, will show the difficulties that had to be overcome, the many disappointments that had to be borne, and the ultimate success that crowned my efforts after the perfection of the mechanical contrivances; which, as it will be seen, was the work not of a day, and the result, not of accident, but of long, laborious, and persevering application.—*American Journal of Med. Sciences, Jan.* 1852, *p.* 59.

SYPHILITIC DISEASES.

106.—ON THE TREATMENT OF SYPHILIS.

By Prof. Bennett, Edinburgh.

[The following remarks are taken from No. 8 of Dr. Bennett's very valuable Clinical Lectures:—]

The treatment of syphilis may be said to be of two kinds,—namely, the simple and the mercurial. The profession are rapidly deciding in favour of the first, although some of its members still give mercury in inveterate cases. Many of those we meet with, therefore, have taken the drug, and we have to eradicate the effects of the mineral poison as well as that of the original disease.

The Simple Treatment is divided into internal or medical, and external or surgical. The first consists in the observation of certain hygienic rules, and the employment of general therapeutic means. The diet must be light and mild, meat and all stimulating viands retarding the cure; even with the lightest diet the hunger should never be quite appeased. The regimen must be the more diminished and rigid in proportion to the youth and vigour of the patient. Diluent beverages, decoctions of barley, liquorice, and linseed, alone or mixed with milk, should be taken freely, to the amount, indeed, of several pints a day. Perfect repose must be secured by confinement to bed. Constipation must be obviated by the use of emollient clysters or mild laxatives. The air should be maintained at the same temperature; this is an indispensable precaution in chronic, consecutive, and mercurial affections. Exercise is only useful in the convalescent stage. In chronic syphilis, however, it may often be carried to fatigue with advantage. Tepid baths, repeated three or four times a day, are always attended with advantage. General blood-letting is often required where the primary disease is intense, or the system excited and the patient plethoric, but should not be used indiscriminately.

In the external or surgical treatment, strict attention to cleanliness and the position of the diseased parts should never be lost sight of. Emollient decoctions or fomentations, or dressings of simple cerate, are the best applications, and the dressings should not be too frequently renewed. Leeches are generally necessary. The greatest benefit is derived from the external use of a concentrated solution of opium (in the proportion of about two drachms to one ounce of water); it soothes excessive irritability in all cases. When the suppuration is moderated and the surface of the ulcer cleansed, stimulating dressings, consisting of solutions of the sulphates of alum and copper, the nitrate of silver, and sub-acetate of lead, favour cicatrization.

In inveterate cases, more especially those labouring under tertiary symptoms, the iodide of potassium was introduced by Dr. Wallace, of Dublin, and used by him with considerable success. I have myself given it in numerous cases with benefit, in doses of five grains, three times a day, conjoined with emollient applications to the affected parts.

The Mercurial Treatment consists in keeping up slight salivation, by means of the internal administration of blue pills or some form of mercury, sometimes conjoined with mercurial frictions or fumigations, at least for the space of a month. This physiological action of the drug may be produced by administering any of its preparations continuously in small doses. If combined with opium, they act less on the bowels and more on the system generally.

It is necessary during its action, that the patient do not expose himself to cold. A certain irritability is produced, and the constant soreness of the gums, the metallic taste in the mouth, not to speak of the inconveniences of profuse salivation which occasionally occur, render this species of treatment anything but agreeable to the patient.

Both kinds of treatment have now been extensively tested. In the year 1822, the Royal Council of Health, in Sweden, having been charged by the king to conduct a series of experiments upon the different modes of treating venereal diseases, reports from all the civil and military hospitals were ordered to be drawn up annually. These reports establish the inconveniences of the mercurial system, and the superior advantages of simple treatment. In the various hospitals of Sweden, 40,000 cases have been under treatment, one half by the simple method, the remaining half by mercury; the proportion of relapses have been in the first instance, seven and a half, in the second, thirteen and two-thirds, in one hundred. Dr. Fricke's experiments in the Hamburgh general hospital were first made public in 1828. In four years, out of 1649 patients of both sexes, 582 were treated by a mild mercurial course, and 1067 without mercury, the mean duration of the latter method has been fifty-one days, and that by mercury eighty-five. He found that relapses were more frequent, and secondary syphilis more severe, when mercury had been given. When the non-mercurial treatment was followed, they rarely occurred, and were more simple and mild when met with. He tells us that he has treated more than 5000 patients without mercury, and has still to seek cases in which that remedy may be advantageously employed. He has never observed caries, loss of the hair, or pains in the bones, follow his treatment, and in all such cases which have come under his care, much mercury has been given.

In 1833, the French Council of Health published the reports sent in by the physicians and surgeons attached to regiments and military hospitals in various parts of France. Some of the reports are in favour of a mild mercurial course, others in favour of simple treatment. They all agree by stating the cure by mercury to be one-third longer than by the other treatment. At Strasburg, mercury was only given to very obstinate cases. Between 1831 and 1834, 5271 patients had been thus treated, and the number of relapses and secondary affections calling for the employment of mercury had been very small. No case of caries, and only one or two instances of exostosis, had been observed. Full reliance may be placed on these facts, as regiments remain in garrison at Strasburg for five or six years.

In the various reports now published, more than 80,000 cases have been submitted to experiment, by means of which it has been perfectly established that syphilis is cured in a shorter time, and with less probability of inducing secondary syphilis, by the simple treatment.

These facts are now very generally admitted, and malignant syphilis is gradually disappearing. Twenty years ago, the most frightful secondary and tertiary cases were met with, and the usual treatment was profuse salivation. At present, such cases are rare. Abroad, owing to wise police regulations, the disease is infinitely more innocent even than it is at present in Scotland; and under the salutary influence of a mild and simple treatment, its virulence is daily abating.

In appreciating the value of this important revolution in practice, we should not forget to eulogize those who had first the boldness to introduce it. The credit of this is mainly due, in England, to Mr. Fergusson, and other British army surgeons, who practised it during the Peninsular campaign ('Medico-Chir. Trans.,' vol. iv.), and to Mr. Rose, of the Coldstream Guards (Ibid. vol. viii.) In Scotland, the writings and lectures of the late Professor John Thomson, of this university, were mainly instrumental in convincing Scotch practitioners of the evils of mercury in venereal diseases. In England, the Hunterian theory and practice have been deeply rooted, and in Ireland have been supported by the writings of Carmichael and Colles. Mercury in consequence is still very generally employed in those parts of the kingdom. The gigantic experiments made abroad, however, ought to convince the most sceptical; if not, let them compare what syphilis is in Scotland with what it was, and especially observe that we never see an instance of the disease such as that now in the ward (Case 1), unless the patient's system has been contaminated with mercury.—*Lancet, July* 24, 1852, *p.* 85.

107.—ON THE EMPLOYMENT OF CHLOROFORM INJECTIONS IN THE TREATMENT OF GONORRHŒA.

By HENRY BEHREND, Esq., Surgeon to the Liverpool Dispensaries.

[Mr. Behrend recommends the use of chloroform as an injection in gonorrhœa, believing it to be well adapted for the various stages of this tedious and sometimes intractable disorder. He says:]

In the first few cases in which I employed the chloroform, I directed it to be injected in its pure and unmixed form; but I soon found that the pain which it occasioned was too severe to be borne, though at no time were such complaints made of it as so frequently follow the use of the nitrate of silver. Accordingly, I now have it mixed with twice the quantity of mucilage; nor does its action appear less prompt from this diminution of strength. The method of injection is the usual one, no special directions being necessary. The frequency must depend upon circumstances. I have not as yet found it advisable to order it more than thrice a day, but recommend its employment once a day for at least four days after all discharge has ceased. Beyond the ordinary avoidance of stimulants, undue exposure, &c., no instructions whatever are needed; and in no instance in which I have as yet tried this plan has it been found necessary to confine the patient to the house, nor have any evil results followed the application of the chloroform to the diseased surface of the urethra.

My object in publishing the following cases is a desire that the value of the remedy may be tested by those who have equal opportunities with myself for the institution of such experiments in the field of practice opened by public appointments, as I am of opinion that the concurrent testimony of many is absolutely essential before any method of treatment, however satisfactory it may appear to individuals, should be considered as fully established.

Case 1. Oct. 20, 1851: Mrs. F., aged forty-eight, contracted gonorrhœa from her husband about a week ago, but has undergone no treatment. Ordered the chloroform, in its unmixed state, to be injected thrice a day; no medicine whatever to be taken. It caused violent smarting pain, which lasted about an hour after each injection; but no dysuria or other unpleasant symptom followed. The first day the discharge increased in quantity, and became more viscid; but on the second it had rapidly diminished; and on the third (Oct. 22) had almost ceased. The fourth day I ordered her to inject morning and evening; and on the fifth the discharge had quite ceased. As a matter of precaution, she continued the employment of the chloroform every morning, until the tenth day, when no trace of the disorder having recurred, she finally discontinued it.

Case 2. *Gleet.*—Jan. 1, 1852: Martha B., unmarried, thirty-two years of age, has had a gleet for twelve months, the discharge varying in quantity, but at present profuse. She has gone through the usual routine of treatment, but has scarcely given many of the remedies a fair chance, owing to irregular habits of life; is at present taking balsam of copaiba, and using injections of sulphate of zinc, from which she derives no benefit. Directed her to discontinue these, and inject with equal parts of chloroform and mucilage thrice a day.

Jan. 5th. The injection was painful, and at first increased the quantity and consistency of the discharge; but after the second day this became much less, and is now very scanty and thin. She suffers no other inconvenience, and is much elated at the prospect of recovery. The catamenia having come on, I deemed it prudent to suspend all treatment.

8th. Last night the catamenia ceased; there is now a slight gleety discharge. Ordered to resume the injection.

12th. Not much change; the injection causes severe but temporary pain. To use it half the strength for the future; that is one part of chloroform to two of mucilage.

15th. The discharge has quite ceased, and she is perfectly well.

19th. Continued injecting once a day till this date; no return of the symptoms.

Case 3. Jan. 12, 1852: John S., aged twenty-four, first perceived pain in micturition on the 8th inst.; very slight discharge, light-coloured, and thin; frequent desire to pass water, with much straining; the urine is occasionally bloody. Ordered a mixture of liquor potassæ, tincture of hyoscyamus, and camphor mixture; and to inject thrice a day with one part of chloroform to two of mucilage.

Jan. 15th. Much improved, but slight discharge; the injection causes great pain for a minute or two.

19th. Discharge quite ceased, and he is perfectly well, with the exception of a little œdema of the prepuce, which disappeared under the application of a saturnine lotion; no recurrence of the discharge.

Case 4. April 29, 1852: Mrs. R., aged forty-five, contracted gonorrhœa from her husband seven days ago; the discharge has gradually increased in quantity, in spite of a regular employment of the acetate-of-lead injection. Directed her to inject the chloroform of a similar strength to that used in the last case.

May 3rd. Discharge nearly ceased; all that now exists, is an exceedingly small quantity of a colourless, watery-fluid; no complaint of pain from the injection. To repeat it once a day.

10th. Has been quite free from all discharge for five days.—*Lancet, July* 3, 1852, *p.* 6.

108.—*Objections to the Use of Chloroform Injections in Gonorrhœa.* By Fred. I. Keene, Esq., of St. Bartholomew's Hospital.—[From the annexed paper the reader will see that this treatment by chloroform is objected to. Mr. F. I. Keene says:]

The 'Lancet' of July 3, 1852, contains an account, by Mr. Behrend, of four cases of gonorrhœa cured by chloroform injections. Now, as there are always plenty of cases of gonorrhœa on hand to act as lay figures, I shall not consider my time mis-spent if I succeed in persuading any one who might be disposed to follow up this practice to pause ere he does so.

Chloroform injections are no novelty. They are mentioned by Mr. Milton; they have been tried over and over again, and failed; for no surgeon who used them long could hold his practice. They produced intolerable burning pain, lasting for several hours, the mucous membrane being made apparently raw. That the discharge occasionally disappeared after this treatment is plausible enough; there is, however, one thing that may disappear with alarming rapidity, viz., the naturally patulous state of the urethra, thus producing the most intractable form of stricture.

The introduction into an irritable canal, in a state of inflammation, of a hot spirit, capable of excoriating the skin, carries one's thoughts back to the earliest days of surgery, and appears to my mind a direct violation of that confidence which, to the honour of our profession, patients place in their medical attendants. For this confidence is based on the direct, but not pronounced assumption, that the surgeon will cause his patient no useless suffering, and expose him to no risk of ultimate injury.

Cauterizing the urethra in acute gonorrhœa was bad enough; but neither this, nor ether, nor the "prostatic injections," equal chloroform injections.

The 'Lancet' of July 24th contains a letter from a surgeon who had also tried chloroform injections, his words will show that I am not exaggerating. He tells us, what? Oh, merely that, having tried it in six or seven cases, the parties complained of severe pain for nine or twelve hours afterwards; also after micturition there is a quantity of blood passed; also great difficulty in voiding the urine, which has in one case necessitated the use of the catheter!

And what right has any surgeon to go on trying six or seven times a substance which he sees producing such effects? Is cutting away a man's testicle, in the course of a radical cure of hernia a shade worse than this? These gentlemen seem to be of the Duke of Alva's opinion, that the sin lies in having tried too long a mild plan, the real remedies being fire and steel.

Moreover, a very short trial was sufficient to convince any one open to conviction, that chloroform possesses no superiority over many other injections; the failures, however, have been ingeniously flitted over with the well-known remark, "that its use seems more applicable to cases of recent infection." Every one knows, that remedies possessing any real influence over gonorrhœa are most efficacious in cases of recent infection.

I confess to a prejudice against this sort of thing; that I am rather disposed to become a convert to Mr. Milton's opinion, that almost every case of gonorrhœa is curable by very simple means, and that the most refractory give way with a little patience, and without torturing the patient. Analogy, and what is more successful, trial, would lead me to believe, that his plan of lessening the discharge by internal means, and applying the injection to the whole instead of a portion of the diseased surface, is likely to do more good, and less mischief, than an injection which drives the patient almost frantic with pain.

As an interlude, the 'Lancet,' of July 17, contains a letter on "Injections of Chloride of Lime." Before this gentleman sends in the rest of his cases, it might be as well if he would look through the German Journals, where he might chance to see that it has already been tried and failed.

As argument and ridicule seem alike incapable of arresting this influx of novelties, we may expect to hear of the cure of gonorrhœa by injections of sulphuric acid, or the introduction of a hot wire down the urethra; this would, doubtless, have the effect of checking the gonorrhœa, as well as of incapacitating the patient from contracting any fresh attack. —*Med. Times and Gazette, Aug.* 21, 1852, *p.* 197.

109.—CASES OF GONORRHŒA TREATED BY M. JOZEAU'S COPAHINE-MEGE;

(A PECULIAR MODE OF ADMINISTERING COPAIBA.)

Under the care of Messrs. LLOYD and POLAND.

[M. Jozeau deserves great praise for the frankness with which he has stated the different ingredients contained in these capsules, and the way in which they are treated and prepared.]

The peculiarity of M. Jozeau's saccharated capsules was stated to be that they were easy and agreeable to take, that they produced no nausea, sickness, or unpleasant purging, and that, when continued for a sufficient period, they cured gonorrhœa in a short time. Considering the insuperable dislike of some patients for copaiba, these, if verified by experience, are certainly most valuable improvements.

The following is the account given by M. Jozeau of the preparation of the Copahine-Mège, and the pathological facts which led to the peculiar manner of preparing this remedial agent:—

It was noticed that such patients as were purged by the copaiba evacuated per anum large quantities of this drug in an unaltered state, their urine not containing any of it. These persons, though sometimes cured, generally had a relapse. Those, however, who were not purged became well more slowly, and had no recurrence of the disease; their stools contained no copaiba, and their urine a great deal. From these facts it became evident that in order to obtain regular and speedy effects, the copaiba should be made to undergo such modifications as to insure its more complete absorption into the system. Experiments were now instituted respecting the effects of the two principal substances contained in the copaiba—viz., the oil and the resin. These were separately tried. The oil produced a decidedly purgative effect; the resin purged less; but no complete cure was obtained by either substance taken separately.

It was now pretty clear that both the resin and essential oil were indispensable for obtaining curative effects, and the question arose how these could be modified so as to allow the stomach to digest them completely. This end was attained in surcharging the copaiba with oxygen, by means of nitric acid, the latter being added in proportions which varied according to the kind of copaiba acted upon. The nitric acid yields some of its oxygen to the essential oil, and the nitrogen is given off in the form of hyponitrous acid, by combining with the oxygen of the atmosphere. The copaiba thus treated is then well washed with water, ntil it no longer reddens litmus paper, and to it are added one tenth art of cubebs in fine powder, the same proportion of carbonate of soda, nd one sixteenth part of calcined magnesia. The mixture is allowed to tand until it is quite solidified, and in that state it is made into small masses. The latter are then carefully covered with sugar, to which a leasant pink colour (coccus cacti) is given, and they then look like very retty sugar-plums.

To these saccharated capsules the name of Copahine-Mège was given, ecause the experiments had been made conjointly by M. Jozeau and M. Mège, and the latter had first thought of making the saccharated capules. For lymphatic patients and delicate females a second mass was repared, into which, besides the above-mentioned ingredients, some teel was made to enter. This is then a sort of martial preparation of opaiba. The doses are stated as follows:—

When there is neither pain nor inflammation, five saccharated capsules re taken three times per diem. One capsule more is then given with ach dose every subsequent day, the doses being thus increased until urging is produced. Where there is pain or inflammation, these should rst be treated by the surgeon in the manner he thinks the most adviable, and the copahine is to be commenced when acute symptoms have bated. It has been noticed that the martial capsules have effected a ure when the simple preparation has failed.

Such being the explanations given by M. Jozeau, several hospital surgeons agreed to give the capsules a trial, but this proved somewhat diffiult, as far as public practice is concerned, since persons affected with onorrhœa are not in general admitted as in-patients into these instituons. It was, moreover, evident that upon out-patients the effects ould not be so conveniently watched, and the value of the remedial gent ascertained. It might also be feared that the form given to the emedy, being extremely elegant and new, out-patients of hospitals ight probably not sufficiently appreciate the importance of the capsules. till it would appear that M. Jozeau was anxious to obtain the approval f the surgeons of this metropolis, as the preparation had already been ronounced as extremely valuable by the Academy of Medicine of Paris, pon a report of Messrs. Boulay, Bégin, and the former surgeon of the enereal Hospital, M. Cullérier. We here subjoin some of the results btained.

[The following case occurred at St. Bartholomew's, under Mr. Lloyd:]

Case 1. John B., aged 28, has had gonorrhœa four days, and has not ied any remedies. He commenced taking the capsules October 17th, 851, the dose being five of these thrice a day. Six days afterwards, ere was no improvement; bowels open regularly twice a day; no naua, but slight scalding in passing urine. Take six capsules three times day. Two days after this increase of the dose, the patient was found tter; the discharge had considerably lessened, the scalding had ceased, d the bowels were opened three or four times daily. No nausea; take ven capsules three times a day.

October 30th, thirteen days after the commencement of the treatment, e discharge had nearly ceased. Bowels open four times a day. Take twenty-four capsules per diem. Five days after this, the discharge had entirely disappeared. On Nov. 9th, being four days after the complete cessation of the discharge, the latter slightly recurred. The capsules were resumed, and in four days no appearance of the affection was left.

Case 2. Edward L., aged eighteen. Gonorrhœa three days; a small sore on the prepuce. Commenced taking five capsules three times a day, on October 17th, 1851, and continued using them for six days, when he was taking twenty-one per diem. The patient was soon purged three times a day, and the bowels continued freely open several times daily, until the eighth day of the treatment, when the discharge ceased. There was no nausea during the use of the capsules.

Case 3. Sarah A., aged 20, has been affected with gonorrhœa for one week. She began to take five capsules three times daily, on the 17th Oct., 1851, and continued them for four days, increasing the dose to twenty-four per diem, when the discharge entirely ceased. On November 10th she left the hospital quite cured. After using the capsules for two or three days, the bowels were freely acted upon, but no nausea or sickness ever occurred during their use.

[The next cases were under Mr. Poland, of Guy's Hospital.]

Case 1. A. B.; gonorrhœa for the first time; duration three weeks; inflammatory symptoms subsiding. Patient took the capsules for sixteen days, increasing from five, three times a day, to eight, and became completely well.

Case 2. W. H.; gonorrhœa for the third time; discharge profuse. Took the capsules for four days, and left off from a dislike to the mode of taking the drug, as he allowed the sugar to melt away too completely before swallowing, and therefore experienced the unpleasant taste of the copaiba in the mouth.

Case 3. Male patient; gonorrhœa three weeks. Took the capsules for a week, without any trouble; but having slightly improved, he did not present himself again.

Case 4. W. B.; gonorrhœa for the second time; copious discharge, which had lasted ten weeks. Took the capsules with a little inconvenience, increasing from five to ten three times daily. The drug acted very well, there was slight purging, and the discharge was checked. In this patient the capsules were not continued long enough after the discharge had ceased, for it returned to a certain extent.

Case 5. Male patient; gonorrhœa second time; copious discharge. Took the capsules, from five to twelve, three times daily, for eight days, without any effect, and did not continue them. It should be noticed that no injections were used in any of the foregoing cases.—*Lancet, November 6, 1852, p.* 423.

110.—*On the Employment of Aluminized Bougies.* By M. JOBERT.—When the stricture is combined with chronic inflammation, M. Jober finds a preliminary treatment by means of *aluminized bougies* of grea service in procuring *dégorgement* of the mucous membrane,—the alum not acting as a caustic substance, but producing a modifying influenc similar to that induced by nitrate of silver in ocular inflammations. He warms the end of a wax bougie, and then incorporates with it some powdered alum, so as to form a kind of magma of the wax and alum. If the latter were lying at the surface of the bougie, it might induce ulceration in place of mere modification of the mucous surface, and the inodular tissue left by this, on healing, would only aggravate the patient's condition. When the *dégorgement* is accomplished—usually in from seven to twelve days—the dilatation of the stricture is proceeded with.—*L'Union Médicale; Medico-Chirurgical Review, Oct.* 1852, *p.* 544.

DISEASES OF THE SKIN.

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111.—ON THE PRESENT METHOD OF TREATING DISEASES OF THE SKIN.

By J. S. Tylor, Esq.

[In the first of the following cases of lepra, the patient, Emma Collinson, aged 12, was first attacked with the disease six years ago, beginning upon her knees and extending to the lower parts of her legs. At present (Sept. 5, 1851) firmly adherent patches of lepra are scattered over nearly the whole of the loins, back, and abdomen.]

Treatment.—Meat was allowed once a day; but a milk and farinaceous diet was chiefly enjoined. Thin oatmeal gruel was directed to be used instead of soap. Malt liquors were forbidden. An alkaline bath was ordered once a week. Half grain doses of the iodide of potassium, combined with three minims of Fowler's solution, were given three times a-day; and an ointment, composed of the nitric oxide of mercury and lard, with a few drops of creosote, was to be applied night and morning to the parts affected. She persevered in the use of these measures for six weeks; and it was very interesting to observe, from time to time, the gradual detachment of the larger and thicker leprous scales, and the healing of the patches from the centre outwards.

Discharged cured, October 17, 1851.

Case 2. *Lepra Vulgaris.*—George Totz, a German, aged 50, Old St. Pickford-square, admitted June 18, 1851. Is a skin-dresser by trade, and much exposed to dirt, and contact with certain chemical substances. Has been affected with lepra for fifteen years. Up to the age of thirty-five, he was robust and healthy. At this time, he was attacked by a scaly eruption which first came on his left elbow, and his health began to decline. He is now weakly, though suffering from no specific complaint but that of the skin. The pruritus is at times extreme, and distresses him greatly. Has been a patient at several hospitals and dispensaries. Irregular patches of lepra are scattered over nearly the whole of this patient's body. The shin bones and arms are also occupied by orbicular patches and spots, slightly depressed in the centre, and many of them are covered with white shining imbricated scales. Some of the patches are inflamed and indurated, and some irregular in shape resembling those of psoriasis. The knees and elbows are coated with thick, closely-adherent scales, of a dirty white colour. Diet, &c., the same as in the last case.

Treatment.—An alkaline bath. Iodide of potassium, with a few minims of Fowler's solution; and creasote ointment.

This patient was discharged cured, October 8, 1851, with his general health much improved.

Case 3. *Lepra Vulgaris.*—Anna Campkin, aged 9, Perry-street, Chiselhurst, Kent, admitted March 17, 1851. A stout, fresh-looking girl, in good general health. She first observed small squamous spots on her arms and legs two years ago. Her father was affected with a scaly disease for some years before she was born. Large circular patches of lepra are symmetrically placed upon the neck, body, and legs. The largest, from two to three inches in diameter, are situated upon the hips, and below the patellæ. The arms and elbows are free from disease: a few spots are developed on the scalp. The disease produces no constitutional disturbance. The itching only troublesome when warm in bed. The complaint gradually increases, but does not vary with the seasons of the year. Rules given with respect to diet, &c. Alkaline bath as usual.

Treatment.—Doses of one-twelfth of a grain of bichloride of mercury, with a few drops of laudanum, three times a-day. An ointment, containing a small quantity of both the nitric oxide and the ammonio-chloride of mercury, to be applied night and morning. On the 7th of April, Fowler's solution was added to the medicine, and creasote ointment was substituted for the mercurial.

On the 30th of April, as she did not make rapid progress, the iodide of potassium, with liq. arsenicalis, was prescribed, which was persisted in till she got well.

June 20.—Quite well. Skin everywhere perfectly clear and sound. This patient did not leave the hospital till the 28th of August, during which time she experienced no relapse, and took no medicine.

Case 4. *Lepra Vulgaris.*—Elizabeth Maunder, aged 22, unmarried, Blue Anchor-road, Bermondsey, admitted December 20, 1850; a healthy young woman. Six years ago a few red spots appeared on both elbows at the same time, which shortly became covered with white filmy scales. Parents both healthy; neither has ever suffered from any cutaneous disease. She can assign no cause for the attack. Over some parts of this patient's body the spots represented the appearance of lepra alphos, being small, raised, and coated with very white scales. On the limbs the patches are of considerable size, mostly depressed in the centre, and covered with shining metallic-looking scales. The parts chiefly affected are the fore-arms, and the legs from the knees to the ankles. Diet and bath as usual.

Treatment.—Half-grain doses of the iodide of iron, with Fowler's solution, and the creasote ointment; but as the arsenic, even in very small doses, disagreed with the stomach, the bi-chloride of mercury was prescribed on the 3rd of January, with a few drops of the tinctures of opium and cantharides. This patient disliked medicine, and not being an inmate of the hospital, neglected to take it for more than six months. But, as during the summer her complaint became much increased, she a second time applied for relief. The mixture last prescribed was again ordered, with the occasional addition of a few drops of Fowler's solution, as she was able to bear it.

She was discharged cured, Oct 17, 1851.

Case 5. *Lepra Alphos.*—Anne Fitch, unmarried, aged 28, 48, Spencer-street, St. George's-in-the-East, admitted October 3, 1851, a stout, healthy-looking woman. At the age of 15, during menstruation, she bathed in the sea. The catamenia were immediately arrested, and, shortly afterwards, spots of lepra appeared on the breast-bone. She suffers much from dysmenorrhœa, but otherwise enjoys good health. Her head, face, arms, and elbows, are sprinkled with small scaly and elevated spots. The knees and the backs of the hands are also covered with spots of a larger size, coated with very white friable scales. She states that the loins and abdomen are similarly affected. These spots are visibly raised and mostly circular. She has undergone much medical treatment. Rules with regard to diet, the use of soap, &c., as before. An alkaline bath as usual.

Treatment.—The iodide of potassium, with Fowler's solution and the creasote ointment.

Nov. 7.—Well, except that her arms look red, and are somewhat irritated, from her having been occupied the whole of the previous day in washing with soap and soda. Discharged cured.

In three cases of lepra out of the five, the disease seemed neither to be hereditary nor to have arisen from any specific cause. In one it was probably inherited, and in another occasioned by suppressed menstruation. In one case it had existed for two years, in two cases for six years, in one for thirteen, while, in another, it had lasted for the long period of fifteen years. In the case of Elizabeth Maunder, the cure was not accomplished for ten months; but this is to be accounted for by the patient suffering a long interval to elapse without taking any medicine. Upon resuming it she soon recovered. Four months was the longest time during which any other patient was under treatment. All the patients took a combination of the iodide of potassium and arsenic. With one this remedy did not agree, and she recovered under a course of the bichloride of mercury. It will be seen, that, where powerful medicines were exhibited, very small doses were invariably given, and were found to be efficacious; and, far as I am from any leaning towards homœopathic humbug, I feel certain that this is a point very important to observe, both as least interfering with the general health, and as most effective in the cure of these as well as of many other chronic diseases. Where Fowler's solution is administered in drachm or half-drachm doses, several instances of which have lately come under my notice, I am sure that it is neither so safe nor so efficient a remedy as when given in doses of from two to five minims; and, while it is evident that arsenic is a most valuable medicine in the treatment of many cutaneous diseases, it is, I believe, a great mistake to suppose, as some practitioners manifestly do, that this drug is a specific for all. With regard to external remedies in squamous disease, the alkaline bath has been proved to be of essential service, though the constant use of soap is certainly irritating and injurious. The old practice of using tar still obtains under the concentrated form of creasote; and this as a local remedy may be readily employed through the medium of unguents and liniments. But while outward applications will alleviate some of the more distressing symptoms, very little will certainly be done towards obtaining a radical cure without attacking the root of the disease, which, with the exception of a few complaints dependent upon external exciting causes, has its seat in the blood. After all, medicaments of every kind must be employed, with special reference to the peculiar constitution of the patient as well as to the general state of his health; and strict attention to diet, change of air, &c., are as important aids to recovery in these as in all other diseases.—*Med. Times and Gazette, Aug.* 7, 1852, *p.* 138.

112.—ON THE APPLICATION OF GUTTA PERCHA IN THE TREATMENT OF DISEASES OF THE SKIN.

By Dr. Robert J. Graves, F.R.S.

[When any abrasion of the surface of the body takes place, nature immediately sets to work to provide some impermeable covering for the protection of the delicate tissues from the action of external influences. This was the idea which led Dr. Graves to introduce a solution of gutta percha in chloroform, for the same purpose in various diseases of the skin. The advantage of this preparation over collodion is, that it is not liable to crack and peel off; but being more tough and extensible, it more nearly resembles the natural covering. The effect, he says, has been most favourable in the cases in which it has been tried, diminishing inflammation and aiding the restoration of the healthy structure of the skin. Dr. Graves says:]

Whether it acts by the equable pressure which the film of gutta percha, suddenly coagulated from the fluid state, must exert on the surface to which it becomes so firmly adherent, or whether its efficacy be rather owing to other causes, it is beside my object in writing this notice to discuss. I may, however, remark, that the curative properties of such an artificial covering are not confined to the skin, for I am informed by Mr. Moore, that in the 'Gazette Médicale de Paris' (April 10, 1852) is an account of the successful application, by M. Dechange, of collodion in orchitis, and the *modus operandi* is said by him to consist in its compressing the tissues, and protecting the parts from the action of the air which he thinks is a powerful element of phlegmasia. Without giving an unqualified assent to this explanation, I can have no hesitation in announcing my firm conviction, that in diseases of the skin this solution furnishes us with a new and active remedy, exerting effects quite different from those produced by any topical application hitherto in use.

The transparency of this artificial membrane enables us to watch the progress of the subjacent diseased skin, and its colourless nature prevents it from disfiguring the face when the eruption occupies that part. Its perfect cleanliness, too, is no small advantage, and affords a very agreeable contrast when compared with the usual ointments, &c.

My observations confirm what reasoning on this subject would lead us to expect, that this application is more suited for dry, scaly, tubercular, and chronic diseases of the skin, than for acute affections attended with much oozing of fluid and comparatively active inflammation.

Still, its good effects are by no means limited to chronic diseases of the skin or to those of a scaly, dry nature, for, as will hereafter appear, I have seen it decidedly useful in the spreading form of impetigo. My experience of this remedy makes me very anxious to witness its application in the first stages of erysipelas, as analogy leads me to hope for good results in such cases.

Of course the patient must aid the efforts of the physician, and must as far as possible abstain from everything which tends to rub off or injure the artificial cuticle, for its virtue ceases when its continuity is broken, and the external air finds admission to any part of the diseased surface.

[Early in the month of November, 1851, Mr. Graves saw a lady, aged 50, who was affected with impetigo: this had increased to such an extent that some of the spots or patches were larger than the hand.]

The itching at night is intolerable, and nearly deprives her altogether of sleep. I employed the usual general and topical treatment for a fortnight without alleviation of her sufferings, when luckily I thought of trying the saturated solution of gutta percha in chloroform, and had it carefully applied by Mr. Nicholls, of Dawson-street, at first by way of trial, to one of the smaller spots, and on the following days to each of the larger patches of eruption in succession. The relief obtained was such that it appeared almost incredible both to the patient and her family. Her cure was accomplished in less than three weeks; for, dreading the sudden stopping of so great a discharge and so much cutaneous irritation, I proceeded cautiously, and towards the end of the cure, when she returned home, I directed an issue to be inserted in her arm, as a measure of precaution. She has continued well up to the present time (11th April, 1852).

In this patient we were at first obliged to re-apply the gutta percha every second day, as it was rapidly detached and broken up into large flakes by the discharge from the subjacent surface. Its healing influence, however, speedily diminished the diseased secretion, and then the artificial cuticle remained longer adherent, and it was not necessary so often to use the scissors for the purpose of cutting off the loose portions of gutta percha membrane previously to applying a fresh layer. I ought to have remarked that the camel's-hair brush should be plunged, the moment it has been used, into hot water, to prevent it from being consolidated by the coagulated gutta percha.

This case caused a great sensation among my patient's friends and relatives, and many were the inquiries made relative to my method of cure. I must confess that my own astonishment at the result was not less than theirs.

Since that time I have repeatedly used this application in *acne of the face*, in which disease each of the pimples should be covered with the solution, and the patient enjoined not to rub off the pellicle by washing, &c.

In some this treatment alone causes a material and rapid diminution of this tormenting eruption, and by perseverance in this plan, there is every appearance in two of my patients that the tendency to throw out the pimples is gradually ceasing.

Finally, in several cases of *psoriasis* I have applied the solution with great benefit. In this disease much care must be taken to prevent the application being rubbed off by the clothes, and no woollen stockings or rough garment of any sort should be allowed next the skin. I had the satisfaction of curing in a fortnight a chronic psoriasis of the back of the hands and arms in a lady who had been under homœopathic treatment for six months without deriving the least advantage from the infinitesimal doses prescribed by the practitioner.

Since the preceding observations were written, I have received the following note from Mr. Moore, a gentleman distinguished alike for his practical, scientific, and literary attainments. This additional information concerning the effects produced by the application of collodion strongly verifies my observations respecting the local antiphlogistic action of a gutta percha pellicle:

"M. La Tour has for some time advocated the doctrine that external inflammation may be speedily subdued by withdrawing the affected surface from the influence of the air. This he effects simply by a layer of collodion, which, he says, rapidly assuages the inflammation of gout and articular rheumatism. At the meeting of the Academy of Medicine, on the 8th of Feb., M. La Tour related a case of peritonitis in which the symptoms were dissipated within twenty-four hours, by the application of a layer of collodion to the whole surface of the abdomen."

[Dr. Neligan, in his Treatise on Diseases of the Skin, has justified the value of this application in *erysipelas*.

Dr. Stokes has proved its efficacy in preventing ulceration from the pustules of *small-pox*—of this disease the following case is related:—

A patient, Anne Kenny, aged 18, was attacked with small-pox, which, on the 6th of May, 1852, gradually assumed typhoid symptoms. At this stage she was ordered wine and carbonate of ammonia mixture, and her face to be painted with a solution of gutta percha in chloroform:]

The solution was applied with a soft brush; the entire face being well coated with it, and after an interval of a few minutes (just sufficient to allow the previous coating to dry), a second coat of the solution was applied.*

This application, she said, gave her great relief, and allayed the pain and itching,. On the 13th, she was much better, and the solution was again applied in the same manner.

May 22nd. She has progressed most favourably; all the crusts have come off the face in large pieces, and there is hardly any trace of the disease remaining except a slight discoloration. During the whole time of her illness, from the application of the solution, her face continued moist, and there was no ulceration in any place.

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* It is of great importance, and essential to the success of this treatment, to observe, that the *gutta percha* solution should not be applied to the face until the pustules are fully maturated, or even begin to exhibit the first appearance of collapse as indicated by the well-known central depression on the apex: applied then, the solution is of the greatest service: *applied before maturation, it is mischievous.*

Catherine Sherlock, aged 12, was admitted May 13th (seventh day of eruption). Her illness commenced by headach, pain in her loins, and rigors, but without sickness of the stomach; she was never vaccinated. On admission she had a good deal of fever of a typhoid type, the eruption had come out well, was confluent, and had completely covered her face; she complained very much of pain and itching of her face and head, which kept her from sleeping. The solution of gutta percha was applied as in the former case, and apparently gave her much relief, for she was easier afterwards, and ceased rubbing and tearing her face in the manner in which she had been doing before. Wine was also freely used, as in Kenny's case.

May 22nd. All trace of the disease has nearly gone. the crusts coming off in large pieces, and the remaining marks of the disease being very trifling when compared with the violence of the attack.

The same effect of the solution in keeping the face moist was also observed in this case as in the preceding.

In communicating these cases, Dr. Stokes observed, as worthy of notice, and probably connected with the beneficial result produced, that the most remarkable effect of the gutta percha was to keep the face constantly moist, and to prevent the formation of hard, irritating crusts. He also mentioned to me a singular illustration of the effects of total exclusion of air from the cutaneous surface, as a preventive of the eruption in the small pox. It was of a man who, while in the Meath Hospital for a scrofulous enlargement of the knee-joint, was attacked with this disease; the knee had been previously tightly strapped with adhesive plaster, and on the disappearance of the eruption, it was seen on removing the strapping, that not a single pustule had been developed on the parts which were thus covered.

It is scarcely necessary to add that, however useful solution of gutta percha in chloroform, or any other topical applications, may prove, it would be, nevertheless, absurd to expect from them a radical cure of those chronic cutaneous affections which arise from constitutional causes, whether strumous, syphilitic, or cancroid; as well might we look for the cure of scarlet fever, small-pox, or measles, by means of remedies applied to the skin solely with the view of relieving the eruption. Still, in every chronic disease it is manifestly desirable to diminish, by topical means, the annoyance or disfigurement arising from the cutaneous affection. *Dublin Quarterly Journal of Med. Science, August* 1852, *p.* 1.

[Dr. Graves in concluding his article remarks that the solution of gutta percha is most valuable in psoriasis in checking the growth of any new spot, seeming to smother as it were each nascent centre of future blotches.]

113.—*Cure of Nævus by Subcutaneous Elastic Strangulation.* By JAMES STARTIN, Esq.—[The following plan for the cure of nævus is given by Mr. Startin in a letter to the Editor of the 'Medical Times and Gazette.']

It consists in environing the nævus or tumour with a ligature passe by means of a long round needle beneath the skin, so as to include the morbid parts in a triangular space which shall extend a line or s beyond the boundaries of the nævus, care being taken, that both ends of the threads, (made of strong boot-closer's twist) have their exit at tha apex of the triangle which is most conveniently situated to allow an elastic band, half an inch wide and two or three inches long, made o No. 16 vulcanised India rubber sheeting, to be fastened upon them, s as to permit the necessary tension to be made upon the band, and, through it, upon the subcutaneous thread surrounding the nævus.

There are two methods of operating by elastic strangulation :—The first, is to fix the elastic band upon the ends of the ligature half-an-inch from their exit, after being passed round the nævus, without previously tying a knot upon the tumour, as in the case of the ordinary subcutaneous ligature.

The second method, is to employ a subcutaneous ligature, and thu strangulate, or arrest, the circulation in the tumour, before fixing on the elastic band.

In the first method, the elastic tension of the band upon the ligature occasions the thread to ulcerate or cut its way out; and this may be accomplished in twenty-four hours, or in as many days, according to the force of the tension employed. To measure this force, I have constructed a graduated elastic band, with a small hook at one end, which, excepting the hook, is enclosed in a leathern sheath, in such a manner as to allow each division of the band, as it is drawn out by the hook, to mark the equivalent of half a pound weight. By this simple apparatus the force used can be neatly indicated and regulated at pleasure, it being borne in mind that, by a quick division of the morbid growths, we secure an abundant suppuration, which we can augment, if necessary, by iodine injections, &c.; whilst by a slow division of the parts, the healing process can be caused to go on behind the ligature, as it is drawn forward by the band.

In the second method of operating, a knot to strangulate the nævus or erectile tumour, is to be tied; after passing the thread beneath the skin and around the nævus, before the elastic band, as above, is hooked on to produce the necessary tension for bringing away the ligature. The curative action of the tension being the same in both methods of operating but the force used should be less when the subcutaneous knot is necessary, as arteries or veins of large size will be usually implicated, and it will be prudent to avoid the chance of hæmorrhage, which much force might endanger.

The cases of nævus, or erectile tumour, in which my experience has proved the superior advantages of this operation over those in ordinary use, are examples of the complaint occurring in the face, implicating portions of the features,—of the forehead, eyelids, cheeks, or nose, for example,—where the knife or caustics are inadmissible, and also in those "blood-marks," "port-wine stains," &c., on the face or neck, where other surgical means are not possible or easily applied.—*Med Times and Gazette, July* 3, 1852, *p.* 22.

114.—*Local Treatment in Confluent Small-pox.* By HENRY GEORGE, Esq., Kensington.—[In this case the subject was a young lady aged 24. The constitutional symptoms ran very high, the entire appearance indicating a formidable seizure. The whole surface was directed to be covered with hair powder, and general soothing remedies were ordered. The eruption appeared on the 4th of May. On the 11th, an urgent message arrived to say she was dying. Mr George says :]

I found her indeed in a most precarious state, her appearance very distressing, not a feature to be recognised, the eyelids perfectly closed, and the throat enormously swollen, even as low as to the clavicles, so as nearly to be on a level with the lower edge of the inferior maxillary bone; the body, also, and the arms and legs, were one mass of eruption; she was now collected when spoken to, but had been perfectly sleepless, agitated, and delirious through the night; her pulse was scarcely to be counted, felt herself sinking; the deglutition was extremely painful and difficult; the three preceding nights had been passed with little or no sleep. I ordered directly a small injection, containing one drachm of laudanum. I covered the throat with jeweller's cotton, well sprinkled with finely powdered camphor; and half an ounce of the same material was scattered over the bed, between the sheets; her diet to consist of beef-tea, gruel with brandy, &c., to be given in moderate quantities and at short intervals; the medicine ordered was ammonia, with extract and decoction of bark, and a little Battley's sedative every six hours. 11 a.m. fast asleep, breathing quietly; 4 p.m. awoke once, composed and much refreshed; took some caudle, is again asleep; 9 p.m. has taken nourishment twice; is very cheerful, and declares to feelings of perfect comfort. Cont. omnia.

12th. Slept nearly the whole night; has taken plenty of nourishment; the throat scarcely swollen; deglutition not at all painful. When I look back to her condition yerterday, I am almost surprised at the change. I renewed the camphor in the bed; continued the medicine; her diet still to be generous. 9 p.m. has slept a great deal; is desirous of food, and is perfectly free from any kind of pain. Cont. omnia.

13th. Has passed another comfortable night; makes no complaint; the medicine and diet to be continued; the camphor was renewed.

18th. Has been recovering rapidly; the hair-powder has all along been assiduously applied; all the pustules are healed; the eyes have been open some time, and the features perfectly natural, innumerable as the pustules are, they are all distinct; I have cleared the face of all incrustation; the bark medicine has been continued; the bowels regulated with colocynth and rhubarb pill, and the diet is now partly solid.

24th. Is convalescent; no change has been made in the plan of treatment.—*Med. Times and Gazette, July 3, 1852,p.* 22.

115.—ON THE USE OF COLLODION TO PREVENT PITTING OF THE FACE IN SMALL POX.

By M. QUARRIN WILLEMIER.

This practitioner has successfully employed collodion in a case of molified small-pox, in which the pustules were confluent on the face. On he first day of the eruption he applied on the cheek a slight layer of collodion, which continued adherent until the period of desiccation. A soon as the collodion began to be detached it was removed, when th subjacent skin was found to be perfectly smooth and in its normal condition, while the surrounding portions of the integuments presente crusts and slight depressions. The patient stated that he had felt n itching where the layer of collodion had rested, while this sensation wa constantly present in the neighbouring parts.'

The means hitherto employed to prevent pitting from small-po are the following:—Cauterization of the pustules with nitrate of silve the application of Vigo's plaster, (emplastrum hydrargyri cum ammoniaco), or of a constantly renewed layer of mercurial ointment. The firs of these is an ectrotic plan, for the vesiculo-pustular secretion is at onc discharged by it; the other two should rather be called resolutive mean If the layer of mercurial ointment be applied but for a day or two, th purulent secretion is only retarded, and will re-appear. In order wit certainty to prevent its formation, the layer of ointment must be kep up until the desiccation of the last pustule on the body.

Now, if it were proved that Vigo's plaster and mercurial ointmen merely acted by protecting the eruption from the contact of the air, an perhaps of the light, it would be much simpler to cover the face wit diachylon, with lard, or, as the author has done, with collodion, an thus avoid the danger of salivation. But a decisive experiment has a ready shown that diachylon and lard are inefficacious. In 108 soldie affected with small-pox, M. Champouillon covered the face with Vigo plaster, while diachylon, lard, or a layer of oil was applied to the nec Except in 11 cases, the Vigo's plaster prevented the pustular eruptio while only four patients escaped the formation of pustules on the neck

Might a more fortunate result be expected from the use of collodic than M. Champouillon has obtained with diachylon, lard, or oil? A si gle fact is not sufficient to decide this question; for the means just quo ed have succeeded in nearly five per cent. of the cases in which they we tried, while the almost constant efficacy of topical mercurial applicatio leads to the inference that the latter possess a specific action; at t same time, nothing can be easier or safer than to institute experimen with collodion similar to those of M. Champouillon.

The selection of a preventive for variolous pits may be based on t following considerations:—The cauterization of the pustules, otherwi called the ectrotic method, is little employed; the application of t caustic is a minute and difficult operation, for each vesicle must be sep rately opened and cauterized with a fine pencil of nitrate of silver; it moreover, very painful; it ought at the utmost to be confined to the pu tules on the eyelids, which it is very difficult to cover accurately wi Vigo's plaster. The cauterization *en masse* of the face with a conce trated solution of nitrate of silver has likewise been proposed, but it also very painful, and is little to be recommended. The mercurial to cal applications are greatly preferable to the foregoing; it is assert that, far from producing pain, and, consequently, a swollen and dang ous state of the face, they prevent congestion of this part, and are ev observed to allay existing cerebral symptoms. Lastly, the mercur ointment is more eligible than Vigo's plaster, because the latter cann in all instances be evenly applied to the surface, and, in the case children, it cannot without great difficulty be kept in its place, while, with a little attention, the face can always be kept smeared with a layer of ointment The only inconvenience of these mercurial applications is the occasional production of salivation; but this sometimes occurs spontaneously in small-pox, and topical mercurial applications have not been found to aggravate it. A more decided inconvenience produced by the use of these local remedies is, the eruption of mercurial eczema; but even this is a mild affection, and, like salivation, not to be compared to the formidable results of confluent pustules on the face. It must in addition be observed, that it is, at least in theory, prudent to assist the coming out of the eruption on the limbs whenever that on the face is treated ectrotically; for this purpose, warm poultices to the feet will be found useful.—*Repertorium, Tijdschrift voor de Geneeskunde; Nouvelle Encyclographie des Sciences Medicales.—Dublin Quarterly Journal, August*, 1852, *p.*253.

116.—*Cachexia Eczematosa in Children.* By DR. W. S. OKE.—This disease is very common amongst the ill-fed and neglected children of the lower classes. There is a pale and sickly aspect, and on different parts of the scalp the hair is matted together with filthy scabs of eczematous secretion, from which exudes a thin and irritating discharge. There are also weak ulcerations behind the ears, and about the angles of the mouth, and on the nares, &c.

There is no eruptive disease more easily got rid of than this, provided the treatment be carefully carried out. The whole of the scalp having been closely clipped, and the scabs removed by poultice or fomentation, the eczematous parts are to be smeared by the ointment, 1, twice a day, and well fomented before each application. The alterative dose, 2, is to be given twice a week, and the strength supported by 3. By these means the removal of the disease will be at once accomplished.

1.—℞. Unguenti hydrarg. nit. oxidi, oz. ss. Bis die applicandum digito.

2.—℞. Hydrarg. cum. cretâ, gr. iij. Pulv. rhei, gr. iv. Pulv. cinnamomi, gr. j. Misce fiat pulvis bis hebdomedâ sumendus in theriacâ.

3.—℞. Quinæ disulphatis gr. ij.—iij. Acidi sulphurici dil., gtt. vj. Tinct. aurantii, co. Syrupi zingib. sing, dr. ij. Aquæ destillatæ, ad oz. iij. Misce capiat cochleare largum bis quotidie. —*Provincial Med. and Surgical Journal, Dec.* 24, 1851, *p.* 698.

117.—*Treatment of Lupus Exedens.* Under the care of JAMES STARTIN, Esq.—[The following case is a good illustration of the mode of treating this disease in the hospital for diseases of the skin.]

On February 25th, 1852, Emma Munday, aged 25, of light complexion, was admitted as an out-patient, under the care of Mr. Startin. For eight years past she had suffered from the eroding form of lupus on the tip and left ala of her nose, both of which parts were considerabl destroyed. The ulcer had ragged, firm edges, and was surrounded b flat indurated tubercles, of a violet colour. During the first two years she stated that the disease existed as a single, broad-based, firm tubercle covered with desquamating layers of epidermis, and which graduall took on ulcerative action. Since that time it had slowly but steadil progressed, in spite of the variety of treatment which had been tried Her home was in London, but she had, in hopes of benefit, paid lon visits to the country, both inland and at the sea-side. As, however, i usually the case in this form of the disease, change of air had alway aggravated her complaint.

Treatment.—A solution of the nitrate of mercury in concentrate nitric acid was freely applied, with a glass brush, to the whole disease surface, including all the surrounding tubercles, and over this wa painted a thin coating of prepared collodion. She was ordered to tak a teaspoonful of cod-liver oil three times a day, with a pill every nigh containing a grain of calomel and a third of a grain of opium.

March 4th.—The whole surface suppurating freely, the epidermi covering of the tubercles being quite destroyed. An arsenical pov der, made into a paste with water, was thinly applied. To continu the medicines.

During the first three months, one or other of the caustics was usual applied every fortnight, though (often in very small quantity; the ac being selected for any fresh tubercles which appeared, and its effe followed up by the paste until the raw surface took on a new and healtl action. The constitutional treatment was continued up to July 2 when she was dismissed quite cured, all surrounding thickening havi disappeared, and a pale soft cicatrix being all that was left to mark t seat of past ravages. The mercurial, though continued so long, h not produced ptyalism, or any other unpleasant effect, save once or twi a slight attack of griping pains, which subsided on omitting the pil which she had been directed to do occasionally. In constitutional vigo she improved throughout the treatment, and when discharged she w stout, and expressed herself as feeling unusually strong and well.—*Me Times and Gazette, Aug.* 7, 1852, *p.* 141.

118.—*On the Medical Uses of Urate of Ammonia.* By DR. BAU —Five years' observation has convinced Dr. Bauer that this is a m valuable medicine in chronic cutaneous diseases and in tubercu diseases of the lung. An ointment containing one scruple to the oun is applied by a pencil to the eruption night and morning, the cure be effected in from one to three weeks. In tubercular disease the ointm is rubbed in alternately night and morning on the back and front of chest. No inflammatory complication should be present during employment.

In reference to this substance it is interesting to observe, that Colombia, South America, where lepra prevails so extensively, benefit derived from the external and internal use of *guano* has been placed beyond all doubt: and Dr. Lallemand has found it of great utility n the treatment of morphœa in the Brazils. The urate of ammonia, which is found in this substance in great abundance, is probably the chief medicinal agent.—*Buchner's Report.—Medico-Chirurgical Review, July*, 1852, *p.* 277.

119.—*On the rapid Cure of Itch.* By MM. Hardy and Devergie. —M. Hardy states that by the modification which he has introduced nto the mode of treating the itch at St. Louis, he is now enabled to definitely cure a patient in *two hours*, so that it is in contemplation to reat all patients suffering under this disease as out-patients. The ntire body is first thoroughly rubbed for half an hour with soft soap, which has the effect of breaking up some of the furrows in which the cari are lodged. A tepid bath is next employed for one hour, in order o soften the epidermis, the patient continuing to wash himself well while in it. Finally, the patients rub each other thoroughly for half an our over the entire surface with the sulphur ointment (lard 8 parts, ulphur 2, subc. potass 1), and the itch is cured. The various secondary ruptions, formerly confounded with the itch, may require several days or their dispersion, by means of simple baths. In 4 only out of 400 ases so treated, have relapses occurred, and 144 cases out of 145 occurng in June were so cured.

In this way the disease spreads by contagion much less than heretoore, when the patients had to wait until they could obtain admission to the hospital.—In a recent paper, however, M. Devergie expresses n opinion that this rapid cure of a disease which has often been long ersistent, is a practice not to be followed, as being dangerous to present r future health. In certain forms of itch the secretion is abundant, nd when the disease has been mistaken, this may increase, so as to rm a kind of purulent emunctory not to be at once destroyed with mpunity. It is probable, that some of the internal abscesses, which ave been observed in cases of this disease, have arisen from its repercussion; and certainly in no other form of pustular eruption would the ractitioner thus act. The itching or pruritus which is produced is not ntirely an indifferent matter, and the habit of nocturnal scratching ust not be suddenly suppressed. Even when pedicular disease or urigo is suddenly arrested, dangerous pulmonary congestion sometimes curs, requiring active rubefacients, although here little or no secretion s been suppressed. A single gentle friction suffices to destroy the ntagious property, and it is best to complete the cure by repeating ch for five or six days, than to run the risk, by too violent friction th very strong ointments, of producing the too sudden repression, or exciting various forms of eczematous or lichenoid eruptions, which e sometimes more difficult to cure than the original disease, especially mong the working-classes, who are so apt to neglect the condition of eir skin.—*Union Méd.; Bull. de Therap.—Medico-Chirurgical Rew, July*, 1852, *p.* 276.

120.—*On the Use of Yeast in the Treatment of Boils.* By J. R MOSSE, Esq., Fareham.—[Having read in the 'Lancet' Mr. Hunt' paper on the prevailing furunculoid epidemic, Mr. Mosse is led into th following remarks:]

These troublesome boils are equally as painful to bear as obstinate t cure, hardly yielding to any treatment by ordinary medicinal means, for n sooner do you succeed in getting rid of one ere another appears, thu baffling and setting at defiance most remedies.

During a period of eight years and more, being in practice in th West of England, where these annoyances rather raged, and were know by the name of "pinswills," I was induced to try the efficacy of commo yeast, (having failed to give relief by general modes of treatment), : doses of a tablespoonful with some water, three times a day, for a adult, and smaller doses for children.

I have now practised in this town nearly six years, and have had fr quent opportunities also here of witnessing the good effect of yeast these troublesome affections, easily consummating a rapid and comple cure without further recurrence, and by a most simple remedy, with reach of all.—*Lancet, July* 31, 1852, *p.* 113.

121.—*Operation for Cicatrices from Burns.* By W. FERGUSSON, Esq F.R.S., &c.—[Most cases of interference with the knife in dividi the cicatrices of burns, so far from benefitting the patient, have act ally seemed to increase the tendency to contraction. At the Orthopœ Hospital, gradual stretching of the parts seems to have had a val able effect; but from the following case of Mr. Fergusson's, a combin tion of the knife and extension seems likely to lead to a favourable issu

Martha S., aged 17, single, was admitted Nov. 25, 1851, under t care of Mr. Fergusson. When 6 years old, while lighting the fire, t girl's gown caught fire, and her clothes were completely destroyed, bu ing severely both her arms, the upper part of her neck, and back. about two years she was completely restored, but a great many cicatri were left, causing great deformity.

On admission, one of these was found extending transversely betwe and under the two angles of the jaw, drawing down the bone and mou towards the sternum, and preventing the patient from closing her mou There were, besides, some large cicatrices on both arms, from the elbo to the hands, and several on the back and shoulders. In the centre the cicatrix of the neck a circular aperture was noticed, about the s of a silver fourpenny piece, which was caused by an involution of skin forming a *cul-de-sac* about one inch deep. Either way beneath cicatrix on each side of this sac, were the two firmest bands which w drawing down the chin.

On Dec. 13th, 1851, Mr. Fergusson passed a knife into the sac, a made a V-shaped incision on each side of it, thus dividing the two stro est bands of the cicatrix, and then dissected each of the flaps backwar In this manner, the fold of skin which formed the sac was unravel nd the girl could now extend the neck. On the next day the latter was ept extended by means of pillows placed under the shoulders, the head eing allowed to hang backwards over the bolster. Three days aftervards the neck was still more extended by means of a double bandage assed round the forehead; the extremities of the roller being turned in he figure of 8 between each axilla, and over the shoulders.

Six days after the operation, the wound looked much larger, and with n effort she could close her mouth. The patient thus progressed faourably for about four months, when the movements of the head had ecome quite free, and she was discharged in a favourable condition.—*ancet, June* 26, 1852, *p.* 612.

122.—*Treatment of Contracted Cicatrix.* By Mr. Tamplin.—I have tely had an opportunity of witnessing some very novel and satisfactory esults of the process of extension upon the fræna and contractions of ld burns of the neck and limbs. Mr. Tamplin, of the Orthopœdic ospital, the ingenious contriver of this plan of treatment, has succeeded n straightening and restoring parts so circumstanced in a most marvelus manner where excision had wholly failed, as it notoriously does pon these occasions.

In one very bad case, a dense cuticular band, confining the forearm, d entirely suspending all power of motion in the injured limb, was mpletely reduced and disappeared in about twenty weeks after the pplication of an apparatus along the back of the arm throughout its tent. The strain, which is never relaxed by day or night, has the fect, in the course of time, of producing an absorption of the substance the band or web, and as the parts slowly yield under the stern influce of such measures, the power of motion recommences, which should e expedited by passive exercise from time to time.

The Reviewer observes :—We cannot help here making the observaons that the principle of treatment inculcated by Mr. Tamplin, and pracsed by him at the Orthopœdic Hospital, upon contracted cicatrices, is e of the most important improvements in the practice of modern surry with which we are acquainted. The frightful operations resorted for the cure of deformities thus produced, are amongst the horrors of r profession; and almost make the blood run cold in thinking of them; hilst, as is well known, their success was most doubtful, and their zard to life very great. We believe that this plan of treatment is yet its infancy.—*Medico-Chirurgical Review, July,* 1852, *p.* 29.

DISEASES OF THE EYE AND EAR.

3.—ON THE OPERATION FOR CONGENITAL CATARACT.

By William White Cooper, Esq., Ophthalmic Surgeon to St. Mary's Hospital.

n a clinical lecture upon this subject, Mr. Cooper makes the followg pertinent remarks. First :]

As to the age for operating on congenital cataracts. On this poi some diversity of opinion exists; but there can be no doubt that, if po sible, the step should be taken before teething has begun; and if circu stances do not admit of this, it will be prudent to delay the operatio till teething is at an end. The extreme youth of a child is no objectio I have operated (in one case) at the age of three weeks and five day but perhaps between the second and fourth month is the best time. is important not to delay the operation beyond the fourth or fifth mont as the eyes speedily acquire that oscillation,—that restless seeking aft light, or rather sight, which is very characteristic of such cases; and a ter puberty this is extremely difficult to overcome. I have watch with interest the mode in which command is acquired over the eye At first they are very intractable; the patient, as the dawn of vision breaking and a new world opening upon him, tries hard to bring the under subjection; they can be fixed but for a second or two, then bac wards and forwards they roll with increased velocity; little by little y see the dominion of the will; the rebellious muscles gradually give wa until at length a few spasmodic twitches, lingering like expiring e bers, are all that remain of the previous distressing oscillation. Thou Cheselden, Ware, and Hey, had operated with happy effect on conge tal cataracts, and Mr. Gibson, of Manchester, threw much light on t subject, Mr. Saunders was the first to systematise the matter, and to l down clear and definite rules for the treatment of the disease. His tention was especially directed to it by observing the absorption of tra matic cataracts; and he determined to improve upon the suggestion accident, by applying to it the rules of art. In the first instance, used a very large needle, which he thrust through the sclerotic and hind the iris, cutting up the lens into small fragments, which someti nearly filled the anterior chamber. Finding, however, that formida inflammation was often excited by this proceeding, he modified it, re cing the size of the needle, and contenting himself with a careful lac tion of the centre of the capsule; and, towards the close of his life, he this by puncture through the cornea. His straight needle has, with fling modifications, been retained, and is that generally employed. must however mention, that among the valuable contributions to o thalmic surgery rendered by Dr. Jacob, of Dublin, is his peculiar nee for the anterior operation for solution.

The operation which, in common with many others, I adopt as a ge ral rule for congenital cataracts, is this anterior operation, or *keratony* With a fine needle, sharp at the point and shoulders, but with a sh well calculated for preventing the escape of aqueous humour, I lacer the capsule as near the centre as possible, cutting it in several directio at right angles to each other, but not to any extent. The object of t is to permit the aqueous humour free passage to the lens, which spee swells by imbibition, and becomes white and opaque. If the capsule too much torn, the lens may slip out, and fall bodily into the ante chamber; or, if its consistence be soft, part of its substance may squeezed by the action of the muscles through the wound, just as pai squeezed out of the small colour bladders used by artists. Should inflammation be excited, the operation may be repeated in about th eeks; and as by that time the substance of the lens has softened, the eedle may be used more freely in breaking up its mass, especially the ntre of the lens. On many occasions I have observed this; a good ntral perforation has been made in the lens, sufficiently large to allow clear view of the black pigment at the back of the eye. In thirty-six ours this aperture had closed up,—the particles forming the remainder the lens appearing to be drawn together by the attraction of cohesion; e cataract became reduced in thickness, but without the least perceptble opening; after a time, a mere thin scale was visible in the pupil, e particles of which could be freely disintegrated, were then soon abrbed, and sight was restored.

Generally speaking, three operations suffice for the removal of congenil cataract; less may be required—more are seldom needed; and if the pil be well dilated and the operations performed with judgment, the oceeding may almost certainly be expected to succeed. I may, hower, remark, that the danger of inflammation holds a direct ratio to the e of the patient. I have never known it to arise in infants; seldom der puberty; but after that age the patient should be carefully pred by diet, regimen, and if necessary, by medicine. Not but that patient may be over-prepared, and brought into such a state of irritaity as to bring about the very event intended to be obviated. In like nner he may be over-treated after the operation; and I am decidedly opinion that success is to be obtained after all operations on the eye, st in proportion to the judgment and tact with which the patient is ated.

Sir Charles Bell, in his 'System of Operative Surgery,' when speak- of the operations for congenital cataract, and the application of bellanna to these cases, as recommended by Mr. Saunders, says: "It is evint that, notwithstanding the use of the belladonna previous to the eration, that it is of no service; but, on the contrary, the great dilatan of the pupil, occasioned by the use of it, endangers the falling forrd of the lens, and a destructive inflammation may be the consequence this accident." With all deference to Sir Charles, I entirely differ th him. If the needle be properly used, there is little fear of the lens coming dislocated; but, if such an accident should arise,—and it he action of the muscles which causes it, not the support of the iris ich prevents it,—it is far better that the mass should not be bulged inst the iris, which it would certainly irritate and inflame. Should lens, or a large fragment of it, fall into the anterior chamber, and re excite irritation, it may be extracted; but, I repeat, that it deds upon the operator to prevent such an occurrence. One object of dilatation of the pupil, is to remove the iris out of the way, so that gments projecting from the lens may not press upon it; effusion of ph and irregularity of the pupil being the natural consequences of h pressure. But another, and not less important object is, to afford operator a clear view of the surface of the cataract, and an ample d for the play of his needle during the operation; and subsequently, nable him to watch the progress of the absorption, and to see that untoward circumstance passes without notice.

Jntil the discovery of chloroform, the usual proceeding, when about to operate for cataract on children, was to swathe them either in sheet or jack towel, so as to completely confine the arms and legs. Thi overcame a portion of their resistance; but few who have not tried i can be aware of the firmness with which a child can close its eyelids, o the force necessary to open them and to fix the globe for operation. Thi was highly objectionable, causing the eyes to be greatly injected befor the needle was introduced; and, with the crying and spasmodic actio of the muscles, predisposing to inflammation; if that was of rar occurrence, it was to be attributed to the Providence of nature, rathe than the gentleness of the surgeon. Happily all this violence is no unnecessary; the operation can be performed under chloroform with th utmost facility, and without causing a single vessel to become injecte It is well, however, in all operations on the eye under chloroform, to b prepared with not less than two assistants,—for twice during the opera tion of extraction, and once during the removal of a cyst from the int rior of the eye, have I seen the patient partially recover, and offer r sistance at a critical moment; he must, under such circumstances, held by force until a second administration of chloroform fully overcom him. I have said, that, if carefully performed, and on a patient pr viously prepared, inflammation is a rare occurrence; and this leads n to remark on the great change which has taken place during the la forty years in the treatment of patients who have undergone operatio on the eye. I cannot select a better illustration than a short summa of two cases related by Mr. Saunders.

A man of the name of Smith was operated on by Mr. Saunders on t 18th February, 1807. The posterior operation for solution for congenit cataract was performed in both eyes. There was a good deal of symp thetic disturbance the same evening, vomiting, and pain in the head; was bled to 26 ounces, and an ounce and a half of sulphate of magnes administered, but rejected by vomiting. At half-past seven the follo ing morning, the left temporal artery was opened, and 48 oz. of blo abstracted; and the same evening, 33 oz. were taken from the ar "After this evacuation," says Mr. Saunders, "he remained low a tranquil, and his respiration became natural; his eyes were not mo inflamed than they had been in the morning; both pupils were dilate During the day, 10 grains of calomel and opening medicine had been ministered; the following day, 10 more grains with 2 scruples of ca artic extract, were taken. Mr. Saunders adds, "I purged him sim every day, from the 21st of February to the 2nd of March." From t time till the 15th, as there was a return of irritation, he took 2 gra of calomel and 1 of antimony every night; and a purging powder in morning; but we find, on the 31st, that there was still a considera ophthalmia of the right eye, and the pupil of the left eye was contra ing. He ultimately underwent two more operations, and was eventua restored to sight.

On the 18th August, 1807, Mr. Saunders operated on the left eye Fanny Crawford, a child 13 years of age. He says, he very freely ope the capsule and the texture of the lens, leaving the latter project towards the cornea, and pressing upon the iris, which was rigidly c tracted. In the evening, she felt great pain, which was increased on posure to light. Eight ounces of blood were taken from her arm, and 5 grains of calomel were given to her. On the following day, the pain had ceased, but the eye was irritable, and 11 oz. of blood were taken from her; she was also smartly purged. On the 30th the operation was repeated on the same eye, the needle being freely used; in the evening, there was considerable pain in the eye; whereupon 8 oz. of blood were taken from her arm, and she was briskly purged with calomel and sulphate of magnesia. On the following day, the 31st, the eye was inflamed; whereupon the temporal artery was opened, and she lost 8 oz. of blood. On the 1st of September, the inflammation was subdued, but she was ordered a scruple of jalap and a fourth of a grain of tartarised antimony every four hours. On the 8th of November, the right eye was operated on, the capsule being extensively opened, the whole texture of the lens loosened, and a considerable quantity of its particles proected into the anterior chamber. The following day, there was consilerable ophthalmia, for which she was bled to 8 oz., and the same quanity taken on the following day. The sight of both eyes was ultimately estored.

There are few persons in England at the present day, I apprehend, vho would take five and thirty ounces of blood from a child of thirteen n about three weeks, to subdue even a rather severe attack of inflammaion of the eye, and probably the number of persons is even less who vould abstract 107 ounces in thirty-six hours from a man, though both yes might be severely inflamed. It is found that by previous preparaion before the operation, the risk of inflammation is materially diminshed, and that by the use of belladonna, by sedatives, fomentations, nd, if the symptoms be severe, the removal of a moderate quantity of lood, together with mercury, if necessary, inflammation excited by the peration of solution can almost certainly be subdued without the fearl shock to the constitution which such enormous depletion cannot fail excite. Before operations on the eye, an adult in fair health should desired to abstain from stimulants for five days, and meat for three ys, and, on the day immediately preceding, his bowels should be empted by a dose of aperient medicine. This applies to ordinary health. f course the measures must be modified according to the peculiarities each individual case.—*Med. Times and Gazette, July* 17, 1852, *p.* 58.

124.—*On the Operation for Cataract.* By J. DALRYMPLE, Esq., F.R.S.

In operating for cataract, Mr. Dalrymple formerly employed Tyrrell's ife, but of late years adopted the sickle-shaped knife invented by Mr. ott, with which he made the incision very neatly. He always used his ht hand, sitting behind the patient for the right eye, in front for the left, d generally—always for the right eye—making the upper section: the umbent posture was that preferred for the patient. He, like Mr. rrell, used dry bandages, considering that the application of wet rags the eye predisposed to rheumatic inflammation. So, unquestionably, does, if continued too long; but we have seen the greatest comfort rded by such application, during the first twelve or twenty-four hours after the operation. Mr. Dalrymple opened the eye on the third or fourth day, and decidedly objected to the severe depletion practised by the German school. Indeed, he was so well aware of the necessity of support in feeble constitutions, that in many instances he allowed generous diet from the first. The following remarks illustrate his views. "The proper subject of this operation (extraction) must be selected wit care. The feeble, those with habitual cough, asthmatic or rheumati subjects, should be avoided; also those of a very nervous or excitabl temperament, or those labouring under extreme plethora or venous congestion. The great object is to secure primary adhesion of the cornea section. In the very feeble, or where the patient labours under venou congestion, the adhesive process is imperfect. In the former, the woun perhaps closes only at its extreme edges, the iris prolapses, and the cur is slow, incomplete, and the pupil more or less disfigured, and sometimes even closed. In the latter, extensive chemosis is apt to take plac and, from impeded capillary circulation, the cornea becomes opaque, an finally sloughs. In the strong and healthy, inflammation of an acut character may be set up, but this is more easily dealt with by our ant phlogistic resources; but beware how you spill a single drop of blood i the feeble or congestive subject, however red or swollen the eye or eyeli may appear. The rheumatic patient must not be operated on in cold damp weather; for at these seasons a slow, painful, and often dange ous inflammation is set up, which seldom leaves the eye undamaged."

These remarks illustrate the principles which guided Mr. Dalrympl management of cataract cases; and we may add, that he scarcely ev operated between the months of October and May, or if possible duri the prevalence of an easterly wind.—*London Journal of Med., Ju* 1852, *p.* 649.

125.—*Mr. Bowman's New Operation for the Division and Removal False Membrane or Opaque Capsule from the Axis of Vision.*—[Fr the tough and resisting nature of these bands, it is well known that cutting needle often fails to divide or tear them; and thus from t stretching of the parts the iris and ciliary body, to which they are of attached, are very liable to be injured by such a proceeding. Mr. Bo man obviates this by a new and simple method of operating.]

The peculiarity of Mr. Bowman's method consists in the use of t ordinary cataract needles simultaneously. They are introduced thro different points in the cornea down to the band of the membrane, their points having entered it at the same or neighbouring situati as convenient, are then separated, tearing it across, and carryin in two fragments to opposite sides of the pupil. Thus there is no d put upon the vascular parts, and the only tissues touched are the cor and the opaque membrane itself. One needle may be made to furnis fixed point of resistance from which the other can act with advant During the last ten days this method of operating has been successf adopted in seven instances, three of them are cases in which, after removals of the lens by drilling, the pupil still continued closed by membrane; and in the other four the sight was more or less interf with by bands of lymph or tough opaque capsule passing across the axis of vision behind the iris.

We have selected the following cases by way of illustration:—William Henderall, aged 28, a soldier, was admitted as an out-patient, August 3, 1852, being totally blind from the effects of syphilitic iritis. In each eye the pupil was rather less than medium size, irregular, and completely occluded by opaque, whitish, false membrane. He stated that two years previously he had, in conjunction with other syphilitic symptoms, suffered a very severe attack of inflammation of his eyes, for which he was six months under care in a military hospital. When discharged, he was much in his present condition, and had ever since been quite blind.

Mr. Bowman performed, on the right eye, the operation of drilling, which, after a month had elapsed, was repeated.

On Oct. 15, there was a small open point in the centre of the opacity, which was perfectly black, and through which he had perception of light, and could distinguish large objects. In the hope of still further improving his sight, it was determined to attempt to get rid of a larger portion of the opaque membrane. Two cataract needles were accordingly introduced into the eye from the opposite sides of the cornea, and passed down in such a direction that their points met in the centre of the false membrane. On separating them, the latter at once tore vertically down, and its two halves, being carried, one to each side, were lost behind the iris, leaving the pupil perfectly clear.

Oct. 23. The inflammation which followed the operation has been but very slight, and affecting only the conjunctiva. The man has now an oval pupil of fair size, quite clear, and black. He can see with tolerable distinctness, and his sight is daily improving. Mr. Bowman intends before long to perform a similar operation on the other eye.—*Med. Times and Gazette, Oct.* 30, 1852, *p.* 438.

126.—*Needle, with Moveable Point, for Depressing Cataract; and a New Instrument for Section of the Cornea, in the Operation for Cataract.* By M. Langier.—Almost every surgeon must have experienced the inconvenience of the ordinary cataract needles, with a fixed point. Displacement of a fragment of the lens, or of a portion of the opaque capsule can only be effected by making the lancet describe extended arcs of circles, having as a centre the point of the sclerotic traversed by the instrument. The extent of these arcs leads to too great lacerations of the hyaloid membrane, and sometimes even to injury or detachment of the iris. M. Langier believes that these difficulties and dangers may be partly avoided by articulating the point on the stem of the needle, the point being moved by means of a lever in the handle, like the key of a flute. By means of this modification, the centre lens, or a portion of its capsule, or false membranes, may be readily removed from the field of the pupil. It may be introduced quite straight into the eye; and, when arrived in front of the cataract, may be placed at any angle which the operator may desire, and is susceptible of alternate extension and flexion, according to the object which it is proposed to attain. The motion of the point resembles that of the third phalanx of the fingers; and it would be very easy to make an instrument with two joints, which, however, M. Langier has not yet found necessary. With a single joint, the movements of the flexion and extension of the point may be subservient to a number of purposes, such as in breaking up the cataract, tearing through its adhesions, and even forming artificial pupil, either by tearing down adhesions, or by detachment of the iris.

M. Langier has also combined with the jointed needle a concealed cornea knife, by which he believes that the section of the cornea will be made more surely than with the scissors of Richter or others. This keratotome, at the end of which is the articulated point, is a little larger than the ordinary needle. It is much like a lithotome with a single blade; but the blade is not contained in a sheath, which would uselessly increase the size of the instrument, but it is merely applied to another blade, with blunt edges, which cover it, and which contain the spring for moving the point of the needle.

In operating, a large opening may be made in the capsule by the poin of the needle, which is directed towards it through the dilated pupil. I will then penetrate the lens, and bring it, either by the movements which may be communicated to it, or by simple pressure above or below into the anterior chamber. In withdrawing the instrument by the passage by which it has entered, the blade of the keratotome separate from the flat stem on which it lies, and incises the cornea, for a fourt or third, at most, of its diameter. This incision is long enough in mos cases. One advantage of the concealed cornea knife, M. Langier state to be that of incising the cornea from within outwards, so that the deep layers of the membrane are cut to the same extent on the superficial.

In the wood-cuts which accompany the description, the motion of th keratotome is represented as being regulated by a ring in the handle o the instrument.—*London Journal of Med., Oct.* 1852, *p.* 929.

127.—PRACTICAL REMARKS ON DISEASES OF THE EYE.

By James Dixon, Esq., Surgeon to the Royal London Ophthalmic Hospital.

[The object of Mr. Dixon's paper is to endeavour to explain the manne in which cataract is developed in elderly persons, and also in which i extends itself. Most ophthalmic writers consider the opacity to commence at the centre of the lens, and the cases to be exceedingly rare in whic it commences at the margin. Mr. Dixon's observations have convince him that the striæ of the so-called "posterior capsular cataract," an those which begin at the margin of the lens, are but the ordinary phenomena of the first stage of senile cataract. Mr. Dixon attributes thi difference in opinion between himself and most authors, to be from hi less frequently employing belladonna and artificial illumination in examination of the appearance and structure of the lens. These are th symptoms of the approach of this complaint:]

An elderly patient presents himself to the surgeon complaining of some
light mistiness and indistinctness of sight. The iris may be active;
he area of the pupil of natural blackness. Cataract will not suggest
tself to the surgeon, if he be prejudiced by believing that it almost
lways commences in the centre of the lens; and he will probably regard
he dimness of sight as altogether of nervous origin. But let him fully
ilate the pupil with atropine, and then throw light upon each part of
he lens in succession, by means of a convex glass of about one-inch
ocus, he will perhaps find the whole posterior face of the lens covered
ith faintly yellow, opaque lines, radiating inwards from the margin,
nd, along the latter part, grouped together here and there into patches;
r these marginal patches may exist at one or two points only, the
inder face of the lens being in great part clear. This would denote a
till earlier stage of the disease. Or again; in addition to opaque
atches at the edge of the lens, a few striæ may be traced along the
ront surface, stopping short of the border of the natural pupil. The
nterior position of the latter striæ can of course be at once recognised
y a practised observer; but it may aid the less experienced to be told
hat the opaque streaks of a cataractous lens are in themselves whitish.
hose on the front surface, therefore, being viewed through colourless
edia—the cornea and aqueous humour—retain their white appearance;
hile those behind acquire a yellow cast, from being seen through the
till transparent part of the lens.

This body is naturally colourless only during the earlier years of life.
fter the age of forty, it always assumes a pale-yellow tinge; and this
ontinues to deepen as age advances, quite irrespectively of any change
n its transparency. This fact, which I have repeatedly observed in
ecent bodies in the dead-house, is important to be borne in mind by the
oung practitioner who is investigating the disease of cataract.

As I have already remarked, some of our highest authorities on eye
iseases, who have repeatedly seen the deep-seated, streaky opacity at
he edge and back of the lens, believe it to depend upon disease of the
osterior capsule. Tyrrell, although describing it as seated in the lens
self, does not assign any anatomical reason why opacities in that situa-
on differ so essentially in appearance from those in the capsule. A
nowledge of the microscopic structure of the two tissues, however,
akes us at once understand why opacities in the capsule should be of
n irregular, indeterminate figure, and those of the lens radiated: the
psule being a uniform, homogeneous membrane; the lens composed of
bres, radiating, on certain planes, with exquisite regularity.*

Whether cataractous opacity usually spreads from the centre of the
ns towards the circumference, or from the circumference towards the

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* I would not be understood as affirming that the posterior capsule never primarily
ecomes opaque. I only insist on the anatomical fact, that the regularly *radiated*
acity at the back of the lens is due to a change in the posterior layer of its fibres.
have seen in this situation patches, of uniform density throughout, which I have
lieved to be in the capsule itself. In some cases they were eventually followed by
tension of opacity to the lens.

Much valuable information on the subject of capsular opacities, and on cataract
general, will be found in a little volume 'On Cataract, &c.,' (Dublin, 1851), by
r. Jacob; written with his usual clearness and simplicity.

centre, is—as the reader must readily perceive—no question of mer pathological nicety. It has an important bearing on diagnosis and treatment: for if the surgeon assumes that cataract almost always commence at the centre of the lens, he will frequently pass over cases of incipien concentric cataract, because no opacity is visible so long as the pupi remains in its natural condition. On the other hand, a knowledg of the frequency of concentric opacity will lead him, in all cases o dimness of sight in elderly persons, to dilate the pupil, and, by mean of concentrated light, thoroughly to examine every portion of the lens

If this be done, I am sure he will find that when cataract, *at a early stage*, is detected *in old persons*, (these two conditions are essential), the relative frequency of marginal opacity, as compared with tha beginning at the centre, will force him to come to the same conclusio as I have done—namely, that the former mode of development is th rule, and the latter the exception.

According to my experience, the following is the ordinary progress o what is termed "hard cataract." At first opaque streaks appear at th extreme edge of the lens: most commonly the lower edge is first affected These gradually spread themselves over the posterior face, a few onl extending a short distance along the anterior face. The cataract ma perhaps remain at this stage of development for a year or more: the the whole body of the lens becomes slightly hazy, but not so much as to prevent the posterior, radiated opacity from being recognised. Gradually the opaque streaks advance farther and farther along the anteri face of the lens, until they appear within the area of the undilate pupil. By this time the general haziness has increased so much tha the posterior face of the lens is hidden from view, even when concentrated light is thrown into the eye; and the opacity, both the linear an the diffused, become denser and denser, until little more than t anterior surface of the lens can be seen. Cataract is then complet and vision commonly restricted to mere perception of light.

I cannot expect (nor do I wish) that a mere assertion of mine, oppose as it is to the recognised teaching of the best authorities, should be once received as true. In a future paper, therefore, I propose layi before the reader a table of cases of incipient cataract, examined in t way I have already indicated, and with every precaution I could devi against an unfair bias in favour of a particular theory.—*Lancet, Se 18, 1852, p.* 260.

128.—ON HELMHOLTZ'S SPECULUM FOR EXAMINING THE RETINA IN THE LIVING EYE.

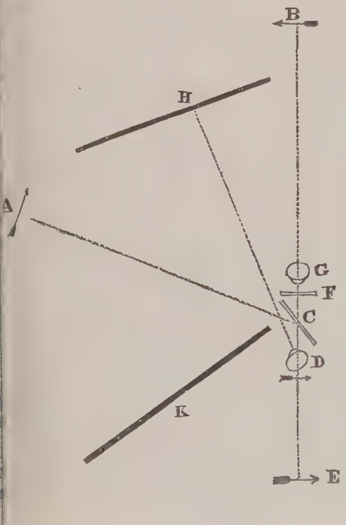
By Dr. W. R. Sanders.

[Dr. Sanders having, by this instrument, been enabled to view distinct the retina in the living eye, ventures to bring the discoveries of Profes Helmholtz before the profession.]

The new eye-speculum consists essentially of two parts,—1st, Reflectors to illuminate the retina; 2d, Lenses to bring its structures with our focus of vision.

Illumination.—The possibility of seeing into the posterior chamber of living eye depends on the fact, that the rays of light which pass into the ye, and fall upon the retina, are not completely absorbed there; but a ortion of light is reflected from the retina, and passes out again through he pupil. According to the laws of optics, these reflected rays, in pro-eeding out of the eye, must pursue, in an opposite direction, exactly he same course which they took on entering it. Thus the rays from a uminous point fall diverging on the cornea, and are converged by the edia of the eye to a focus on the retina; in return, the rays reflected rom the retina pass diverging to the cornea, and, on leaving the eye, re converged to a focus at the luminous point from which they came. he same applies to a luminous body. The rays from a gas flame unite a picture on the retina, from which the unabsorbed rays are reflected ack to the gas flame, and concentrate there in an image of the picture n the retina; and the reflected image is placed on, and coincides in size nd position with, the real gas flame. To see, therefore, into the pos-erior chamber of an eye, we must bring our vision in the straight line of e reflected rays. It is impossible, however, to do so directly, for we nnot interpose ourselves between the eye and the light without inter-epting the latter. By approaching, indeed, as near as possible to this irect line, without being upon it, we may catch the irregular rays, and e the pupil of the observed eye illuminated, as Cumming and Brücke's servations have shown; but such methods are inconvenient, and the lumination obtained is insufficient.

Fig. 1.



By means of a plane transparent reflector, however, such as a piece of flat glass, we can place our vision in the direction in which the rays emerge from the observed eye. Thus let A (Fig. 1) be a flame, whose rays are caught at an angle on a glass plate C, the rays will be thrown along the line C D into the eye D, which will see an image of the flame at B, along the line DB; but the rays reflected from the retina passing out into the same line DC will again meet the plate C; they will be in part turned towards A, but part also will traverse the glass plate C, and go to form a picture at B of the image on the retina; but an eye G, placed behind the glass plate and on the line CB, will meet these reflected rays, and will consequently see the posterior chamber of the eye D illuminated.

The experiment is thus performed:—In a dark room, with a single flame at the side of the experimenters, and on a level with their eyes, the person whose eye is to be observed holds a piece of glass (a microscope glass slip), so as to catch the image of the flame on it; he then, by inclining the glass, brings the image of the flame opposite the pupil of the observer's eye; the latter will then see the pupil of the observed eye luminous, of a reddish-yellow bright colour, like what is called "cat's eye." A person may also see one of his own pupils luminous: standing before a looking-glass, and seeing the image of the flame in the reflector with his right eye, let him bring this image opposite the pupil of the left eye in the looking-glass; the left eye will then perceive the right pupil in the mirror luminous. The observer may also himself place the reflector when observing the eye of another person: by using a very small piece of glass, the reflection from this on a shaded countenance will indicate the direction of the light; and when it is thrown upon the centre of the eye, the observer looking through the glass will see the illumination of the pupil; and by turning the reflector in different directions, and allowing the observed eye to be moved, he may compare the amount of reflection from different parts of the retina.

To obtain the greatest possible amount of illumination, we may either employ a larger angle of reflection, or increase the number of glass reflectors. The most advantageous angles are given as 70° for one glass plate, for three glass plates 60°, for four glass plates 55°. Employing several glass plates is preferable to using a high angle; because the glass being less oblique is more easily seen through, the eyes are better shaded, and at 55° the polarised reflection from the cornea, which interferes with the observation, is nearly all stopped by the glass plate through which the other rays, depolarised on the retina, pass.

For these observations a good oil-lamp or gas-lamp is best; sun light let in through a hole in a shutter may also be used: the observed and observer's eyes should be carefully shaded, and, to prevent mistakes, the eyes not used in the experiment should be closed. This method of illumination is applicable to other cavities with narrow openings, as the ear, the nose, &c.

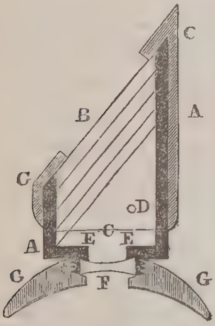
Lenses to bring the reflected rays to a convenient focus. — The luminous rays emerging from the eye D (Fig. 1), and passing through the glass C, unite at B to form an image of the picture on the retina. But at the distance at which B is from the observed eye D, the pupil of the latter, which limits the field of vision, appears so small, that the luminous image cannot be seen through it. We must therefore bring these rays to a nearer focus. Now the rays, on leaving the convex surface of the cornea, are convergent, and our eye can bring only slightly divergent or parallel rays to a focus: all that is necessary therefore is, to interpose a divergent or double concave lens F, of sufficient power, between these rays and the observer's eye. The amount of concavity required in the lens will depend on the distance of the luminous object from the eye; if the focal distance of the lens is equal to FB, the rays will be rendered parallel; or divergent, if the focal distance is less than

FB. The conditions are the same as in the Gallilean telescope or opera-glass, of which the convex media of the observed eye represent the object-glass, and the concave lens the ocular. For ordinary eyes No. 10 of the common concave spectacle glasses is recommended; and Nos. 6 to 12 will supply the changes of lenses necessary as the luminous objects are at less or greater distance. Short-sighted eyes will require stronger lenses, or two lenses, one about another.

By means of the lens F, placed as close to the observed eye as the reflectors will allow, the picture on the retina will be seen under the same angle,—that is, of the same size as the image B appears to the eye D, or even a little larger; the parts of the retina will also be seen magnified in the same proportion. If the luminous object be distant from the eye eight inches, the magnifying power may be calculated at 24 times.

Instead of a concave lens, we might use two convex lenses, of which the first would form an inverted image, which would be magnified by the second. This would have the advantage, that, by regulating the distance between the two lenses, we might accommodate them to the eye looking at near or distant objects, for which purpose we require to change the concave glass. But they are more difficult to manage; there is less light or the image is less clear; and, as the rays must pass through the axis of the lenses, the requisite steadiness of the observed eye and the instrument is very difficult to obtain. Hence the concave lens is preferred in practice.

Fig. 2.



*The Eye-Speculum** (Fig. 2) consists of a convenient apparatus holding together the reflectors at the requisite angle, and the lens. This is easily done by a square tube, A, A, as short as possible, with one end cut obliquely to form an angle of 56° with the base or other end, which is cut across at right angles to the tube. The exterior is bronzed or darkened; the interior lined with black velvet. The glass reflectors, B, which should be four parallel and well-polished slips of glass, are fitted on at the oblique end, and fixed close by an open frame, C, C, which is fastened down to the sides of the tube by screws at D; a diaphragm, E, E, and the concave lens, F, are placed at the base, and secured by a hollow eye-piece, G, which can be screwed off and on, so as to allow the lenses to be changed. Bi-concave spectacle lenses Nos. 6 to 12 are used; for ordinary use No. 10 is convenient.

Method of using it.—In a dark room, with a flame at the side, and on a level with the eyes, which should be shaded by a screen K (Fig. 1), the reflectors are turned towards the observed eye, and adjusted, so as to throw the light on it in the direction of the axis of the instrument.

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* Fig. 2. is a view in section of the eye-speculum as made by Mr. Bryson, Edinburgh, simplified from Helmholtz's instrument.

By a little management, the observer will perceive the inverted image of the flame, and will select a suitable concave glass to see it distinctly It facilitates much the observation to adapt our sight, as if the image were a distant, rather than a near object; and the observed eye should be directed towards a screen (H, Fig. 1). divided into squares, which are numbered so as to regulate the movements of the eye. The observation is also easier with large pupils; hence the importance of shading the eyes; and the use of belladonna might, in many cases, be of great assistance.

Appearance of the retina, &c.—If, when the apparatus is adjusted, and the flame distinctly seen, the observed eye be turned a little inwards, blood-vessels come into view, passing as it were over the flame; and by tracing these from their branches to the main stems, we come upon the central artery of the retina and the optic nerve, at once recognised by its great brilliancy and whiteness; the whole optic nerve is lighted up at once, but no image of the flame is seen upon it. This spectacle of the red vessels on the transparent white ground is of surprising delicacy and beauty; and, when once seen, renders the observer immediately familiar with the objects to be examined; for the largest vessels and the brightest illumination exist here. The artery and vein are distinguished by the deeper colour of the latter, but no pulsation is visible. These vessels dividing pass near the inner side of the optic nerve upwards and downwards, then give off numerous branches on the surface of the retina. There is a semicircular shaded streak at the inner side of the optic nerve, apparently caused by a deficiency of the retina. The retina surrounding the white optic nerve is of a bright red colour, which becomes deeper towards the periphery, and is caused probably by the capillary blood-vessels too small and too faintly illuminated to be distinguished from the gray substance of the retina. Large and small branching vessels pass on its surface, which everywhere shows a distinct image of the flame, brightest around the optic nerve, and fainter towards the periphery. The yellow spot of Sömmering, or spot of direct vision, is of a dimmer yellowish-gray colour, without trace of capillary vessels; its observation is rendered difficult by reflection from the cornea; and the luminous image is much less bright than on the adjoining parts of the retina.

Physiological remarks.—We can ascertain directly that the eye alters its refracting powers to suit its focus to different distances. Thus the image of a flame and of the retina becomes indistinct when the observed eye looks at an object much more distant than the flame. Or if a thread be held horizontally before a flame, its image on the retina will be seen when near the flame, but become indistinct or disappear when the thread is moved from the flame towards the eye. It also appears that neither the optic nerve nor its fibrils in the retina are adapted for receiving impressions from light; otherwise, when part of the retina is illuminated, the corresponding portion of the periphery should perceive light; and when luminous rays fall on the optic nerve, the whole field of vision should be lighted up, as if the whole retina were acted on. But this is not the case; for even less light is perceived when rays fall on the optic nerve than on other parts of the retina. It is there fore the nerve-cells and corpuscles of the retina which perceive the luminous undulations, and localise them to the point on which they fall.

The practical applications of the eye-speculum may be expressed thus:—It enables us to perceive alterations on the retina just as the unaided eye lets us see alterations of the cornea, iris, &c. Thus, congestion, varicose vessels, exudations on or in the retina, or between it and the choroid (the fibrin reflecting more powerfully, because less transparent than the retina, and obscuring the vessels). Short-sightedness may be directly detected by the curvature required for the concave lenses. The presence and degree of opacities of the crystalline will be more easily and certainly recognised. In short, nearly all that dissection has yet shown in the dead eye may, by this instrument, be recognized within the living one.—*Monthly Journal of Med. Science, July, 1852, p.* 40.

129.—*Complete Amaurosis cured by the Endermic employment of Strychnia.*—Strychnia and nux vomica have long been recommended in the treatment of amaurosis; but in the cases in which M. Riberi has hitherto administered the former, he has derived little or no benefit from its employment. He suspects, however, that he has not, in some of these, persevered long enough with it. The successful cases, indeed, hitherto on record, seem to indicate its use in incomplete rather than in complete amaurosis. Induced by successful cases published by Maunoir and Petrequin, he resorted to the means again in a case of complete amaurosis, and with an entirely successful result. The patient was a country lad, æt. 16, of scrofulous habit, who at twelve years of age became addicted to onanism. When about fifteen, he accidently found, on closing the right eye, that he was entirely blind of the left. The loss of sight was unattended by pain or any other symptom. About a year after he fell from a height, and concussion of the brain resulted. Upon this confusion of vision supervened, and eventually complete amaurosis of the right eye also. When admitted, the power of distinguishing light had been lost for a twelvemonth by the left eye, and for two months and a half by the other. As some cerebral congestion was present, he was freely bled and purged, and put on low diet. At the end of a week, the skin, first of the forehead and afterwards of the temples, was denuded by blisters, and a powder, composed of one-eighth of a grain of strychnine and three grains of nux vomica, was applied morning and evening, from the 27th of August to the 20th of September. After the third day, the light of a candle brought near the right eye was distinguished; and by the sixth day he could distinguish natural from artificial light; on the tenth he could see the fingers of the hand; by the twentieth, he was able to assist in the ward; and on the thirty-fourth, he had quite recovered the sight of the right eye, and could see his fingers indistinctly with the left. The right iris had quite recovered its movements, and a slight vermicular motion could be perceived in the left. He refused to remain longer in the hospital in order to attempt to obtain a complete cure of the amaurosis of the left eye.—*Medico-Chirurgical Review, October,* 1852, *p.* 446.

130.—ON THE USE AND ABUSE OF NITRATE OF SILVER DROPS TO THE EYE.

By Dr. T. Wharton Jones, F.R.S.

[When we meet with cases where the lower half of the front of the eyeball and that of the lower eyelid are dyed of a dirty olive green colour at the same time that the conjunctiva so dyed is callous, we may look upon them as produced by the long continued employment of solution of nitrate of silver dropped into the eye. Dr. Jones notices, first, the]

Mode of application.—The discoloration of the conjunctiva being confined to the lower half of the front of the eye and inner surface of the lower eyelid, is an evidence that the nitrate of silver solution, which is merely dropped into the lower palpebral sinus, never reaches the upper half of the eyeball, the inner surface of the upper eyelid, and the superior palpebral sinus. Now, this is a very ineffectual mode of applying remedies to the inflamed conjunctiva. To obtain full advantage from any eye-water, drop, or salve, in conjunctivitis, its application should be so managed that it may come into contact with the whole surface of the conjunctiva; and, for this purpose, when it is a solution which is to be dropped in, the eyelids are to be so drawn from contact with the eyeball that the fluid may readily spread itself under them and all over the front of the eyeball, this being promoted by alternately moving the eyelids to and from each other; or, supposing an ointment to be applied, care should be taken to insinuate a small quantity underneath the upper eyelid, whereupon the ointment will readily spread itself, not only underneath the upper, but also underneath the lower, by slightly rubbing the eyelids over the eyeball.

Operation of remedies to the eye.—In the first place, it is to be recollected, that it is only in inflammation of the conjunctiva, and in superficial inflammation of the cornea, that stimulating applications, as they are called, are of service. They are unconditionally hurtful in the internal inflammations of the eye. The long continued use of nitrate of silver drops, whereby the conjunctiva becomes stained, appears to be founded on a notion, that the application has some special unconditionally sanative virtue, so that if it be only used long enough it will effect a cure. In a late number of this Journal, I endeavoured to explain the mode of operation of drops, ointments, &c., in pustular inflammation of the conjunctiva. I would now add, that if an inflammation of the conjunctiva does not quickly yield, more ill than good is likely to result from a persistence in the use of drops, &c., and some modification of the treatment ought to be adopted, suggested by the circumstances of the case, in order to bring the part affected into a state in which it may prove more readily susceptible to the stimulating remedy.

It is not to the purpose to say, that the nitrate of silver solution should never be used as an application. All the benefit that can be derived from its use may be effected without risk of dyeing the conjunctiva; while other applications, though they may not dye the conjunctiva, will, if as long and as improperly persisted in, prove not less prejudicial in other respects.—*Med. Times and Gazette, June* 19, 1852, *p.* 618.

131.—PRACTICAL OBSERVATIONS ON DISEASES OF THE EAR, WITH RECORDS OF CASES.

By W. R. Wilde, Esq.

Condyloma of the external meatus.—M. D. L., a female, 25, a seamstress, suffering from deafness, tinnitus, occasional pain, fetid and sometimes bloody discharge from left ear for eight months; is otherwise healthy; attributes her affection to cold. The external meatus is completely closed by several condylomata which grow around its margin, but particularly from its lower edge. They are rather sensitive to the touch, lobulated on their surface, project a considerable distance beyond the margin of the aperture, and are a little more florid in colour than the natural skin. When the tragus is pressed backwards with the finger, a muco-purulent and offensive discharge exudes between these growths. It is not possible to insert even a small-sized speculum into the meatus without causing great pain and irritation. She could only hear the watch on touching. The right ear was normal. They were touched with the solid nitrate of silver, after which a poultice was applied. The subsequent treatment consisted in washing over the morbid growths with a strong solution of nitrate of silver every second or third day, and in the intermediate time, keeping a dossil of fine lint, wet with diluted liquor plumbi, applied to the concha, besides the internal administration of Plummer's pill and sarsaparilla. By persisting in this treatment for upwards of two months, the condylomata disappeared, leaving the meatus natural, when the membrana tympani was found unimpared, and the hearing was restored.

I have seen a case of cutaneous cancerous ulceration, extending from beneath the zygoma, which had quite eaten away the tragus, completely occluding the external meatus; but the most common causes of the disease are eczematous and herpetic eruptions, and chronic erysipelas, as detailed in the two subsequent cases.

Eczema Aurium, thickening and closure of meatus auditorius externus.—M. Q., female, 60, has been deaf, "off and on," for several years past, accompanied by noise and wandering pains in the head, with extreme itchiness in the auditory passages. The skin covering the auricle, and the scalp adjacent thereto, is of a fiery red colour, speckled with patches of yellow, formed by the exudation which has collected in thin branny scales all over it. The parts are hot, and in some places sticky, from a thin ichorous matter which exudes from the surface. The auricle has lost its natural shape, its folds and sinuosities being partially obliterated, and it has become hard, thickened, and lumpy. The external auditory aperture has, owing to the disease extending into it, been lessened to a third of its natural size, and it is filled with a branny scurf. Upon removing the latter impediment, we can obtain but a very partial view of the membrana tympani, which appears to be thickened and opaque. Hearing distance, touching. The state of the parts are nearly the same on both sides.

In examining diseases of the external meatus and auditory tube, I find a small silver instrument, shaped like a blunt gorget, very useful.

Cases of this description, and, like this, of long standing, are very hard to manage, because there generally co-exists some constitutional taint, as shown in the cutaneous eruptions often manifest in other portions of the skin, and because the parts now under consideration have become so much altered in form and texture that it requires a long course of treatment to restore them to their natural condition, and thereby re-establish their usual functions. The disease principally occurs in females in middle and advanced life; but it also happens to children from six to twelve years of age. In the latter, however, it is of a much more active nature, at the same time that it is much more amenable to treatment. In young persons the eruption often co-exists with scald head, and in both young and old, if the disease is allowed to exist for any length of time, it extends into the meatus, and even over the surface of the tympanal membrane, which it thickens, and renders opaque. In old persons a collection of branny scales accumulates in the external tube. In young persons a thick creamy discharge will generally be seen coating over the lining of the tube and the external layer of the membrana tympani.

Cleanliness and attention are indispensable to the eradication of these affections. In the first instance, continual poulticing with any emollient substance which keeps up heat and moisture is necessary. Linseed meal, boiled bread and milk, or well-mashed turnips will be found useful applications. Afterwards, when the extreme heat, swelling, vesication, and redness have subsided, a solution of the liquor plumbi, in the proportion of a drachm to the ounce, applied with several bits of fine lint, so as completely to envelope the auricle, and the evaporation prevented by covering over the whole with a piece of oiled silk or thin gutta percha, rarely fails to lessen the irritation and reduce the parts to a healthy condition. But while we employ these local measures, we must not neglect constitutional means. Strict attention to diet should be enforced; salt meats, savoury dishes, and pastry ought to be avoided, and a sufficient quantity of fresh vegetables should be consumed at dinner. After the patient has been well purged, a course of Plummer's pill may be prescribed with advantage—at least five grains daily for an adult; and, in a little time, some of the preparations of sarsaparilla administered in lime water will hasten the cure, and assist to eradicate the disease from the system. This affection is very apt to relapse, and we should therefore continue both our local and constitutional remedies long after the inflammatory symptoms have subsided. Old ladies think they never can have a sufficient amount of warmth about their head, and it is very difficult to induce them to leave off even one flannel nightcap; but we should at least make the attempt, as the head and ear ought to be kept as cool as possible. As the swelling and inflammatory symptoms subside, we should again turn our attention to the state of the auditory tube. If any discharge exists, the meatus should be syringed gently with tepid water daily; and both it, the concha, and the tympanal membrane, washed over every second or third day with a solution of nitrate of silver of the strength of at least twelve grains to the ounce. Still more advanced in the progress of this treatment when the exudation has completely ceased and the thickened cuticle has been quite removed, much benefit will be derived from smearing over the tube and membrana tympani with brown citrine ointment every third or fourth day. This latter remedy of which I have great faith in all diseases similar to that which we are now considering, should be made with either rape or cod-liver oil instead of the lard or butter usually directed in the Pharmacopœias. It is then of a much darker colour, and never becomes hard or crumbly. It should be applied in a melted state with a camel's-hair pencil, and diluted by about one third of almond oil.

Chronic erysipelas of auricle.—T. M., female, 52, has had frequent attacks of erysipelas of the head and face during the last five or six years. The effects of the disease are, however, now manifest only in the external ears, but more particularly the right. The auricle is not much enlarged, but has become hard, inflexible, and resembles a piece of wet thick sole leather; its fossæ being apparently filled up by subcutaneous deposit. It is also somewhat shortened in its antero-posterior diameter. The skin is of a dusky brown colour without any exudations, eruptions, or crusts upon it, but to the feel it is lumpy and nodulated, like what we find in certain forms of elephantiasis. The lobe in particular presents this thickened appearance. The disease has extended some way in front of the site of the tragus, which is also thickened and lumpy. The meatus is nearly closed. The treatment of this disease is very similar to that of the foregoing.

Dr. Kramer relates cases of scirrhous degeneration of the auricle, but it would appear that he has applied the term to cases similar to that now under consideration.

Enlargement of the sebaceous follicles in the concha frequently present in pale, cachectic persons labouring under aural diseases. They are easily recognised by their dark heads, and can be pressed out with a pair of forceps. Besides those eczematous eruptions which I described in one case, many other cutaneous diseases affect the auricle, particularly in children. You are all aware of the excoriations which take place in infants behind the ears during dentition, and of the popular belief that they are salutary. Cleanliness is their chief cure when it is advisable to heal them up. We have a disease in Ireland so prevalent in some counties, that it would appear to be one of our national maladies—*pemphigus gangrenosis*, first described by the late Dr. Whitley Stokes, and of which I have given a description in the medical memoir attached to the Census of 1841. So fatal is this disease among children that no less than 17,799 deaths have been attributed to it in ten years; and as it is a disease very well known to the lower orders, I am inclined to think that the amount has not been exaggerated. It goes under different local names, but the most common are "mortifying hive," "burnt hole," and "black ear;" the latter from its so frequently appearing behind the ears and upon the auricles. In the Irish it is styled *ithcheadh*, or the eating disorder, from its phagedænic character. The vesicles, or bullæ peculiar to this affection, generally leave an indelible irregular lace-like depression, similar to that of vaccination.

Anomalous tumour in the external meatus.—M. N., female, aged 47, has been deaf of the right ear for many years, and is much annoyed by itching and a stuffed feeling in the meatus. Upon inspection we find a tumour in shape, size, and colour resembling a half-ripe mulberry, occupying the anterior and lower edge of the meatus, and extending some way into the auditory tube, which it almost completely blocks up. It is not unlike that disease known here as button scurvy, and to which the late Dr. Wallace of this city gave the name of *morula*. It is attached by its broad base throughout its whole extent, and has neither enlarged nor extended for the last three years, during which time I have been in the habit of examining it occasionally. The patient never had otorrhœa, and there is no discharge now present, but occasionally the tumour becomes painful and irritable, and its colour deepens from a florid red to a purple. It is now of a firm consistence, corrugated on its surface, and has a firm unyielding feel, quite unlike a nævus, for which at first sight it might be mistaken. I will not meddle with this tumour at present, as I once saw an affection very similar in appearance in a lady about this woman's time of life, end in frightful cancer, apparently from an endeavour to remove it by escharotics.

We meet with various other growths in the external meatus and auditory tube, independent of polypus or other morbid products, resulting from inflammation or its consequences. One of the most frequent of these is exostosis, of which I have seen very many examples. The projection generally grows from the posterior edge of the osseous portion of the tube, and slowly, but gradually projects forwards, so as to leave but a slight crescent-shaped fissure between it and the anterior wall of the meatus. The integuments covering such growth are generally very smooth, white, and polished. I have never seen this disease affect both ears, but I have often remarked it in connection with inflammatory affections both of the external tube and the membrana tympani. Autenrieth has given an account of one of these growths, and lately Mr. Toynbee communicated a valuable paper on the subject to the 'Provincial Medical and Surgical Journal.' We had lately at the hospital a young woman in whom the external meatus was closed by a dense membrane, through which, when an incision was made, a probe introduced into the wound came in contact with the bone. As the patient had never heard on that side, and had never suffered from any aural disease in infancy, as well as from the circumstance of there being no bony meatus, we must consider that case as one of congenital defect, of which there are several similar examples on record. I have on two occasions, in private practice, seen a stricture of the auditory tube at the junction of the membrano-cartilaginous and osseous portions, in one instance so small as only to admit the round extremity of an ordinary dressing probe. Hardened cerumen having accumulated behind it, it was with great difficulty removed.—*Med. Times and Gazette, May* 15, 1852, *p.* 487.

MIDWIFERY,

AND THE DISEASES OF WOMEN.

132.—ON ARTIFICIAL DILATATION OF THE OS UTERI.

By Dr. S. W. J. MERRIMAN.

[In a paper read before the Medical Society of London, Dr. Merriman,]

Conceiving that the true principles of midwifery have recently been assailed gave, concisely, arguments from various sources, why it is improper to accede to the proposal to use the fingers as dilating agents in the first stages of tedious labours. No accoucheur can attain true celebrity, he said, who is unable to discriminate between the two principles of action —viz., when to leave the case entirely to nature, and when to render aid. He first referred to the opinions of ancient and almost modern writers, who all advocate this plan of treatment by manual dilatation, and stated that their habit of speaking of the os externum vaginæ as the os uteri, and their belief that the child by its own efforts conduced to the opening of a passage for itself, rendered their advice useful only as a matter of history, not as a rule of practice for the present day. He expressed his surprise at finding such recommendations brought forward at the present time, the reasoning on which the advice was founded being so completely at variance with what we know to be the real state of the case. He then proceeded to the writings of accoucheurs published 100 years ago, and stated that the same advice was found in them, coupled with much else that is now obsolete, because injurious. The learned Smellie, who did so much for the practice of midwifery, was instanced as having gravely recommended and practised dilatation of the os externum by the hand formed into a conical shape, in order that he might pass his hand flat between the head of the fœtus and the os uteri, believing that to be the best way of preventing "the os uteri being pushed before the head of the child." That such advice should be followed, or even referred to as evidence of the applicability of the practice, was inconceivable, especially when coupled, as it is, with recommendations to press back the os coccygis to make room; the principle of Smellie's usual conduct being to do as much as possible himself, and to leave very little to nature. Passing on to modern authors, he showed that Burns expresses his belief that the first stage of labour, or the complete obliteration of the os uteri, should be accomplished in a certain time; and that Dr. James Hamilton limited the time to twelve or fourteen hours of constantly-recurring pains, and recommended artificial dilatation by the fingers if the complete opening of the os were likely to be delayed beyond that time. This brought us to a reason alleged which could be fairly considered—viz., that danger necessarily accrues if the labour last many hours—over twenty-four hours, for example—the term usually assigned to a natural labour. This doctrine he controverted in the following manner. Allowing that Professor Simpson's analysis of Dr. Collins's tables shows that danger to life does increase as the duration of labour is prolonged, he did not consider that danger of much moment, compared with the very great majority of perfectly natural labours of short duration; the question being rather, whether dilatation by the finger does not produce as much injury as the prolongation of the labour would. He brought forward the following statistics from Dr. Collins, that out of 15,850 labours of all kinds, the period of which was noted, 13,412 were over within six hours; 1672 additional within twelve hours; and only 766 were prolonged to twenty-four hours; the total mortality being 158. Dr. Joseph Clarke, of Dublin, attended at 3878 births, in his private practice, and lost none from the effects of protracted labour. In his hospital practice he enumerates 9748 ordinary labours over within twenty-four hours, with 71 deaths, and only 183 similar cases prolonged beyond that time, 37 of whom died; but 49 had required craniotomy to e performed, the head being impacted. The author says, "We have therefore very strong reasons for being in no hurry to hasten the progress of labours, seeing how very large a majority terminate speedily, and how trifling the mortality is from the mere length of time occupied." Pressure by the fingers could not, it was shown, act on the os uteri like the bag of waters, or the head when moulded into a lengthened shape. There could be no reciprocal action between the force pressing upon the cervix and the power of the uterine structure to endure the pressure. The accoucheur cannot tell by the mere motion of his finger what amount of space there is for the head to occupy; and he will seldom succeed in keeping up the lip of the os, except in the last moments of a protracted first stage of labour. Fissures of the os uteri in labour, with enlargement and ulceration, so called, of the cervix, about which so much has lately been said, were briefly alluded to; the cause of these post-parturient complaints being considered a want of tone in the uterine vessels, contraction not duly taking place after labour, or, in other terms, there being a want of re-absorption of the enlarged uterine structure. The author considered that pressure on the os uteri in artificial dilatation must bruise the part, and render it unable to resume perfectly its pristine condition. The os is treated as if not possessed of sensibility; the sensibility to external objects may be slight, but the distribution of nerves of the organic class is abundant, and they cannot fail to receive injury, and so impede the return of the part to a healthy condition. The necessity of bleeding and tartar emetic to overcome congestion, where pressure has been exerted on the os uteri, pushed down before the head, was also briefly alluded to, as an argument against using artificial pressure in ordinary cases. The author proceeded as follows:—"The temptation to endeavour to hasten a slow labour where the patient resides at a distance, where the fee is small, and a sufficient income can only be got by incessant occupation among a number of patients, is too strong to be resisted; the smallest concession to the desire to afford manual assistance in some peculiar cases is certain to be extended to others, where the necessities of the practitioner are so many. We ought therefore to set our faces boldy against any proposals, the following of which is likely, almost certain I might say, to be injurious to the mother." Then suggesting that the "passing the finger gradually round the os uteri" may produce its effect in a secondary way, by enabling the accoucheur to regulate the mother's expenditure of force upon her uterine organs, by observing whether her powers are equal to the task, and giving nourishment or medicine as required, he concluded thus:—"I look upon labour as essentially a natural, healthy process, yet verging upon disease. The accoucheur's business is to preserve health, not to promote disease; he may hasten a labour by interference, but the interference of dilatation of the os uteri by the finger ought not to be made, except there is that amount of pressure on the anterior lip of the uterus which would soon bring on congestion if it were not moved out of the way."—*Lancet, June* 26, 1852, *p.* 616.

133.—ON UTERINE HEMORRHAGE.

By Dr. Murphy.

[In discussing the subject of uterine hemorrhage in his work on the Principles and Practice of Midwifery, Dr. Murphy enters into an elaborate detail of the uterine and placental circulation. He says:]

"On a question of so much difficulty, and one which has been so much misunderstood. I have preferred giving you the description of the best and most careful observers, rather than my own—to adopt their language as being least likely to be disputed. These quotations are sufficient to prove that there is a portion of the placenta in direct communication with the uterine vessels, which has been described by Weber as a rete of colossal capillaries; by John Hunter, as a cavernous structure; and by Goodsir, as a great cavity everywhere traversed and intersected by filamentous prolongations of the lining membranes of the uterine veins; that the maternal blood is impelled through innumerable uterine arteries into the great cavernous cavity of the placenta, and, having supplied the necessary nutriment to the fœtal blood, flows back through the large oblique canals that communicate with, or are part of the uterine veins; that these venous canals and the cavernous structure are composed of a tissue of extreme delicacy; and lastly, that there is no direct communication between this maternal circulation of the placenta and that going forward in the fœtus. What, then, would the effect if this vascular connexion between the placenta and the uterus were broken through?—if the placenta were partially separated from the uterus? From the nature of this injury the torn curling arteries might not pour out much blood. Any hemorrhage must arise chiefly from the broken veins, and not, recollect, from one, but *from both* of the divided extremities. There are thus two sources from which blood escapes—1st. From the openings that communicate with the rete of colossal capillaries, by which the cavernous structure is emptied of maternal blood, to be again filled by the uterine arteries. This may therefore be considered as arterial hemorrhage of the uterus through the placenta. 2nd. From the venous orifices on the surface of the uterus. The maternal blood flows from both extremities of the divided veins: in the former instance, in a direct current from the uterine arteries through the cavernous structure; in the latter, by regurgitation from the veins of the uterus. You can understand, therefore, not only the possibility but the certainty of the fact which the late Dr. Hamilton stated many years ago—which Professor Simpson has since, with so much ability, confirmed, but which still remains an enigma to perplex some writers on the subject—you can understand why, when the placenta is partially detached from the uterus, blood flows from its denuded surface, and that the exposed uterine veins (or sinuses, as they are called) are not the only sources of uterine hemorrhage. When that viscus is completely separated from the uterus, and its connexion with these arteries broken off, you can also perceive that blood will no longer flow from the surface, and the only blood that can be expressed from it is the residue lodged in the cavernous structure."

In cases of hemorrhage from *partial* detachment of the placenta, its arrest is to be looked for from the coagulation of blood in the cells of the cavernous structure, and the closure of the venous orifices by the agency of uterine contraction. When hemorrhage supervenes upon the *complete* detachment of the organ, its chief source is the venous openings of the uterus, and our object is to induce uterine contraction. By the aid of this, the semilunar or falciform projections, formed by the lining membrane of meeting veins, "are converted into valves, and where numerous short trunks intersect each other, the decussation of these valves completely closes the communication between the vessels." To this explanation of the arrest of hemorrhage it is objected that there may be relaxation of the uterus without hemorrhage, and hemorrhage during firm contraction. Dr. Murphy observes, in reply, that while hemorrhage *must* be the consequence of *complete* relaxation, it need not occur in the very common case of *partial* relaxation. This arises from (1), a slight degree of contraction sufficing to raise the falciform valves and partially to close the communication between the different trunks, and at least to retard the regurgitation of blood. (2.) "The current of the uterine circulation is altered in direction and in force. The arterial blood is no longer drawn towards the cavernous structure of the placenta, but flows into the intercommunicating branches in the parietes of the uterus. The current of the venous blood is directed much more rapidly towards the great central trunks of the abdomen, because these vessels are now relieved from the pressure of the gravid uterus, and by their expansion the venous blood is drawn more strongly from the terminal branches towards the central canals." (3.) The venous openings are frequently filled-up by fragments of decidua, by broken tufts of fœtal vessels or small coagula, which act with sufficient power as plugs when the circulation is not directed strongly towards the uterine surface. As to the cases of hemorrhage occurring in spite of firm contraction, these may arise from retention of a portion of placenta, slight laceration of the os uteri, and analogous circumstances—cases which are clearly exceptional, and in nowise contradictory of the all-important axiom, that *contraction of the uterine fibres is the essential means of arresting uterine hemorrhage.—Med. Chirurgical Review, October, 1852, p. 424.*

134.—*Treatment of Unavoidable Hemorrhage.*—In treating *unavoidable hemorrhage*, attended with exhaustion, Dr. Murphy very much prefers having recourse to Dr. Simpson's plan of artificial separation of the placenta, to turning; and thinks this last operation is quite unjustifiable, on Smellie's plea that the woman must not die undelivered—the very attempt to prevent her doing so being, in fact, sometimes the cause of her death. His rules are thus summed up. (1.) In cases where no exhaustion has taken place, or where this is only commencing, the child should be turned and delivered the moment the os is sufficiently dilated or dilatable. When this is not so, the placenta should be compressed by the plug and by the discharge of the liquor amnii, and other means employed to prevent exhaustion, until delivery is practicable. (2.) In extreme exhaustion, turning should not be performed, but the placenta should be separated, and the child left undisturbed until decided re-action takes place. (3.) When the os is rigid, means should be employed to compress the placenta and increase the action of the uterus, so as to give time for the dilatation and turning. Should exhausting hemorrhage, however, come on in the mean time, the placenta should be removed, rather than the hand be forced into the uterus. Adverting to some additional examples of spontaneous expulsion of the placenta taking place with advantage to the mother, Dr. Murphy observes:

"These cases are only small additions to a large number already recorded by Dr. Simpson, and several other practitioners, all proving that nature, of her own accord, sometimes succeeds in separating the placenta from the cervix, the effect of which is, the cessation of hemorrhage, and generally the recovery of the patient. We have seen, also, that even the child may escape under such unfavourable circumstances. If, then, it be true that the natural separation of the placenta arrests hemorrhage,—if it be consistent with our knowledge of the structure of the placenta and the utero-placental circulation that such should be the case, —and if turning the child is proved to be a most dangerous operation in cases attended with extreme exhaustion, is it not reasonable to think that the *artificial separation* of the placenta in these cases—a much less serious operation, a mere imitation of nature—would be a justifiable practice, and one that hardly merits the very severe castigations it has received? The objection may perhaps occur to you, if separation of the placenta be safer than turning, why not always do so? We would reply, that although safer for the mother, it is destructive to the child; and our practice must be guided by the same principles in this as in other obstetric operations: if it be possible to save both mother and child by turning, to do so; but if we have any doubt about the mother's safety, not to hesitate one moment because of the child. Some practitioners will not scruple to destroy the child with the perforator, when there is a doubt about the mother's safety. Why, then, should we hesitate, in the present instance, to sacrifice the child, if we are satisfied that the separation of the placenta will arrest the hemorrhage and save the mother, especially as by so doing we avoid exposing her to the shock of so dangerous an operation as turning in extreme exhaustion? It is no reply to this argument to say, that some women have been thus delivered in the last stage of exhaustion, and have escaped. I only ask you to examine, as I have done, the records of midwifery practice, to find the number who have not escaped, but who have lost their lives through this operation.—*Med. Chirurgical Review, October,* 1852, *p.* 426.

135.—*Case of Placenta Prævia.* By W. BLAND, Esq., Sydney.—[The following is a letter from Mr. Bland, of Sydney, to Mr. George Bennett, describing the treatment he generally adopts in cases of this alarming and dangerous nature.]

In cases of placenta prævia my practice, for upwards of twenty-five years, has been as follows:—Without the least violence, but, at the same time, with the least possible delay, (that is, as soon as the dilatation or dilatability of the os uteri would permit), to separate and extract the placenta—a hand-basin of warm water about 98°, having in the mean time been prepared immediately to receive it. By the first part of this measure the safety of the mother was secured; by the latter part of it the child. The following were, with me, the grounds of the above prompt and decisive interference:—1st. The imminent danger of the case, which, if anything could be done, brooked no delay. 2nd. The conviction that the complete, early, and rapid, though cautious and gentle, separation of the placenta from the uterus, was the readiest and most certain means of allowing the placental vessels of the uterus to contract, and of thus at once arresting the hemorrhage, while, in furtherance of the same object, by the extraction of the bulky mass of the placenta, with the consequent complete evacuation of the waters, the utmost attainable contraction of the uterus itself could as promptly as possible be ensured; while, again, by the immediate immersion of the placenta on its extraction in the tepid bath prepared for it, the circulation between the fœtal portion of the placenta and the fœtus would be promoted and ensured during an ample period of time for the completion (whether by art or otherwise, and with or without the aid of medicine as the case might require) of the delivery of a living child.

I will only add, that whether the above theory be correct or not, the result of it in practice has far exceeded my most sanguine expectations. —*Lancet, Sept.* 4, 1852, *p.* 216.

[We still maintain that the separation of the placenta in these cases is unnecessary. Whenever the os uteri is sufficiently dilated to admit the hand, or even part of it, there can be little or no difficulty in turning the child and bringing it down to such a degree that compression of the placenta alone will be sufficient to prevent much hemorrhage. Delivery may, then, be accomplished the moment the os is fairly dilated.]

136.—ON THE RE-INVERSION OF THE UTERUS.

By Dr. S. W. J. Merriman, Lecturer on Clinical Midwifery at the Westminster Hospital, &c.

[Dr. Merriman refers to the discussion of Mr. Forbes's valuable paper on inversion of the uterus, read at the Royal Medical and Chirurgical Society, because he believes that in England no attempt has been made to reduce a chronic inversion of the womb with the assistance of chloroform. He presents the following case, however, where it has been successfully attempted in France. It is extracted from the 'Archives Générales de Médicine' for May last.]

The subject of the paper was a young married woman, aged 24, who was confined of her second child on December 14, 1850. Her labour was natural, and lasted ten or twelve hours. The delivery of the placenta was painful, and of long duration, followed by an abundant hemorrhage, which yielded to cold compresses on the epigastrium. Three days afterwards, the patient felt a tumour come out of the vagina, as big as the head of a full grown-fœtus, and from this time she had frequently hemorrhages and leucorrhœas alternately. It was not till long afterwards that, the disease being recognised by a physician at Lyons, she was admitted under the care of M. Barrier, who ascertained her condition to be as follows: -The patient could scarcely walk or stand upright; she had pains in the region of the kidneys, and a very great pain at the orifice of the vagina, with a sensation of bearing down and constipation; micturation was not difficult, the abdomen was natural, except a little pain on pressure, over the left ovary; she was very much reduced, and in a state of extreme chlorosis; she was often threatened with fainting when she stood upright. The hemorrhage had returned after a week's cessation, and was copious. On examination by the toucher, the finger scarcely entered the vagina before it felt a tumour in that canal, free below, and all around, but adhering to the further extremity of the vagina, by its upper portion. The tumour was pyriform, larger below than above--its size a little above that of the normal uterus: its surface was soft, velvety, and flocky,—tomenteuse, without either elevation or depression, and presenting no orifice. The upper part of the tumour formed a largish cylindrical pedicle, in continuity with the extremity of the vagina, and arising from it; only at the juncture of the two a circular elevation presented itself, over the whole of which the finger could pass, without being able to penetrate between it and the tumour, as happens in cases of polypus or incomplete inversion of the uterus. The tumour had the natural consistence of an uterus, being neither decidedly soft nor hard; it was very moveable on its point of attachment; the vagina was large, but nowhere inverted. The orifice of the vagina was too small to allow of procidentia, after the protruding part had been once pushed back. It was clearly a case of complete inversion of the uterus, although contained within the vagina, and consequently agreed with the first variety of the three forms recognised by authors, and especially by Boyer.

Convinced of the insufficiency of medicines to restore a patient so weakened by continual hemorrhages, M. Barrier decided at once to attempt the reduction of the inversion; and, having a little strengthened the patient by rest, quinine, and steel, he profited by a suspension of the hemorrhage to try to replace the uterus by a form of the taxis in the following manner:—"The patient being placed on her back, the hips brought to the edge of the bed, the thighs separated, and etherisation effected, M. Barrier introduced his hand into the vagina. To give the uterus as much fixedness as possible, he placed it in the hollow of his four fingers; then, by pressing with the ball of the thumb applied directly to the fundus uteri, the most dependent part, he pushed it back in the direction of the axis of the outlet, with the intention of placing the neck of the uterus against the sacrum, and of supporting the extremity of the vagina by a resisting medium, in order to guard against its rupture. After a few minutes of gentle but sustained pressure, the fundus uteri had entered into itself *(était rentré en lui-même)* from two to three centimetres. The same pressure was still kept up for an instant, when, feeling the organ gradually give way, the operator psssed his index and ring-fingers into the depression where his thumb had begun to lodge itself, as he pressed back the fundus uteri. With these two fingers he changed the direction of the force without increasing its amount; he then pushed back the fundus uteri from below upwards and from before backwards. Immediately the uterus yielded completely, and took again its natural position. All pressure being now abandoned, M. Barrier examined the state of the parts; by his hand placed on the hypogastrium, he felt the womb in its usual position; his fingers passed *per vaginam,* entered easily to a considerable depth into the dilated cervix, which, fully dilated, was continuous with the vagina, without any sensible line of demarcation. The reduction being effected, a vulcanised caoutchouc bag was placed in the vagina, and distended, in order to prevent a return of the malady, as also of the hemorrhage, which was feared. During the operation the patient lost only from twenty to thirty grammes of blood; and she recovered without accident, being completely cured." The paper was referred to MM. P. Dubois and Banyan, but their report has not yet been published.

The circumstantiality of this report precludes any idea of misconception; we have, therefore, before us a case of this hitherto incurable disease, perfectly cured, without apparently any alteration of structure which could prevent the parts from exercising their proper functions. We are not told how deep the anæsthesia induced was, but it must have been very great, so completely to relax the rigidity of the uterine fibres as to allow of their being rolled one over the other. The intensity of the anæsthesia, and the liability to laceration, render the operation full of peril; yet the blessing of success is so inestimable, that I think we should be justified in attempting to effect the reduction, should a case present itself giving a mere chance of success. With a cool head and an experienced administrator of chloroform to assist, we may fairly make the trial, after the successful issue of the case related above.—*Med. Times and Gazette, Sept.* 4, 1852, *p.* 231.

137.—ON THE MEANING OF THE TERM 'ULCERATION,' AS AT PRESENT APPLIED TO UTERINE DISEASES.

By Dr. T. Snow Beck, F.R.S.

[Dr. Snow Beck first remarks upon the difference in the meaning of the term ulceration, when applied to diseases of the uterus, and when applied to any other parts of the body. He then quotes numerous authors who have given their explanations of the term. All of these, as Dr. Watson remarks, more or less restrict the term to those cases in which loss of substance occurs upon some surface, internal or external. He then proceeds:]

According to these definitions, to which many more might be added, the essential character of ulceration is a solution of continuity or excavation, or a loss of substance in a part; for it is evident, that the discharges which usually accompany this lesion are not characteristic of, nor essential to it, inasmuch as they are also products of simple inflammation of the mucous membrane. The accuracy of these definitions are confirmed by more recent observation of morbid phenomena by the aid of the microscope, which has shown, that, previous to ulceration taking place, the blood becomes stagnant, and adheres to the walls of the vessels, that the neighbouring tissues thus lose their vitality, by changes similar to what occur in mortification, and, being carried away by effused fluid, a solution of continuity, or loss of substance, is produced. To express this series of morbid changes in a short phrase, many pathologists define ulceration as "molecular death," or "molecular gangrene." But this does not in any way alter the essential character of the previous definitions; for, when "molecular death or grangrene" occurs in any tissue, "a solution of continuity, or loss of substance" in that tissue is the inevitable result.

Admitting, then, that these definitons correctly express the essential character of ulceration, we may inquire, whether this term has been applied with propriety to many morbid states of the orifice of the uterus. At the late discussion at the Royal Medical and Chirurgical Society, Dr. Murphy is reported to have said: "A girl was admitted into the hospital (University College) dying from the effects of opium. At the autopsy, he had examined the uterus, and found an ulcer on both lips extending into the cavity. It was seen by the pupils, and was sent to the curator to be preserved, but the next day it had lost all its characters, and was thrown aside." With all respect to Dr. Murphy's deservedly high standing in the profession, and the personal esteem which must be felt by all who know him personally, I can only come to the conclusion that some scource of error must exist in this statement. A solution of continuity, or a loss of substance, on the lips of the uterus, would have been as readily recognised the day after the autopsy as on the day of the examination; and, if the supposed ulceration "had lost all its characters the next day," is it not certain that ulceration had not existed, and that some other morbid appearance had been mistaken for it? How could the loss of substance be repaired? And, if still present, it would have been recognised. I feel the greater confidence in speaking upon this subject, since I have carefully searched during some years for these reputed ulcerations in my own practice, and in the hospital practice of other physicians without being enabled to discover them. During this period I have seen many cases of inflammation of the mucous membrane covering the lips of the uterus, and even extending into the cervical canal, which presented a red and granular appearance, and which had been designated ulceration, but wherein no loss of substance or solution of continuity existed. Sometimes the glands in the mucous membrane were chiefly implicated in the inflammation, and each being surrounded by a defined circle of redness, they presented, when grouped together, a circumscribed and defined granular patch, studded with minute pits or holes, which led to the orifices of the glands. In these cases, the pathological condition did not differ from that of chronic inflammation in other mucous membranes, as, for example, in the granular condition of the conjunctiva; in the state of the mucous membane of the stomach, to which the name of mammillation has been applied; in the condition sometimes observed in the urethra of the male after gonorrhœa, &c. In these instances, there is no loss of substance in the membranes, nor has any one contended that ulceration was present; yet this name has been applied to the same morbid conditions when observed in the mucous membrane of the vagina, or in that covering the lips of the uterus. With this explanation it can readily be understood, that an inflamed mucous membrane might lose its characteristic appearances the day after the autopsy, especially if it had been immersed in any fluid; but if a loss of substance or an ulcer had existed, that ulcer would have been as readily discovered the next day, as on the day on which the first examination was made.

The essential character of ulceration—that it is a solution of continuity or loss of substance in a tissue—has been sufficiently proved, and the pathological changes which occur have been also pointed out. In abrasion, or excoriation, the epithelial covering of the mucous membrane is removed, but the substance of the membrane itself remains uninjured. There is no solution of continuity, or excavation, or loss of substance in the part, and this constitutes the essential difference between the two lesions—abrasion, or excoriation, and ulceration.—The pathological changes which occur are equally distinct. In ulceration, the blood becomes stagnant, adheres to the sides of the vessels, the vitality of the part is destroyed, molecular death or gangrene being induced. In excoriation the blood flows on without interruption or stagnation; a portion of serum is effused beneath the unorganised epithelium, which being detached, is subsequently removed. The changes which occur may be compared to the effect of an exceedingly minute and mild blister, active in its character, acute in its course; whilst ulceration is the consequence of minute mortification, usually slow in its action, chronic in its course. The difference between the two lesions, and the pathological changes which occasion them, thus appear to be well defined; but there is one point of view from which the two might be confounded. The first change occurring in mucous membrane about to undergo minute gangrene is, in some cases, the effusion of bloody serum beneath the epithelium, and the subsequent desquamation of this part. And if we were to inquire no further into the changes going on, it might be concluded that, as there is desquamation of the epithelium, in the beginning of the process of ulceration, and also in excoriation, that hence the two states are pathologically identical. But this would be a very superficial mode of considering the question. In the changes which produce ulceration, desquamation of the epithelium is not the only alteration which takes place in the membrane; for, after its removal, the surface appears livid and dark-coloured, the tissues having lost their vitality, and the vessels of the part being blocked up, as in mortification. But in excoriation, the separation of the epithelium is the first and only change which occurs in the tissues of the membrane, which, after its removal appears red and florid, the vessels being pervious, and the blood circulating through them. Excoriations, then, are the consequence of inflammation of the mucous membrane, or, as some have expressed, of catarrhal inflammation, more or less acute; ulcerations are the results of molecular gangrene, or mortification, the sequence of disease extending into the deeper tissues of the organ. Thus, even from this point of view, it would be illogical and erroneous to consider these two morbid conditions as pathologically identical.

The importance of this subject is greatly increased when considered in relation to the treatment of the diseases of the uterus. From many communications I have received, I have no doubt that the idea of having so loathsome a disease as "ulceration" on the uterus, has induced many females to submit to the employment of the speculum, and escharotics; while the same term has been considered by practitioners as a justification for this mode of treatment. It is thus intimately connected with the proper or improper use of the speculum, in the treatment of uterine disease. Where ulceration really exists, which is very rare, unless it be specific ulceration, the local application of escharotics by the aid of the speculum, during the later stages of the disease, is, no doubt, an useful adjunct to the other means of cure; but when excoriation only is present, or a reddened or swollen state of the mucous membrane, conditions which accompany inflammation more or less acute, the employment of these therapeutical agents is not only improper, but frequently most injurious.—*Med. Times and Gazette, May* 29, 1852, *p.* 545.

138.—INTRA-UTERINE POLYPUS: DESCENT, AFTER DELIVERY, BEYOND THE VULVA; SPONTANEOUS CURE.

By Dr. Oldham.

[The following case occurred in the practice of Mr. Vidal, of Aveley, in Essex, with whom Dr. Oldham saw it in consultation.]

A middle-aged lady, whom Mr. Vidal had attended in six confinements, one of which was preternatural, was advanced to her full term in her seventh pregnancy in October, 1851. On the 4th October she complained of much pain, simulating labour-pain, for which Mr. Vidal, finding it to be of a spasmodic character, prescribed some saline medicine with small doses of opium, which relieved it; and labour itself did not come on until the 17th of October. On examining after the membranes

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had ruptured, Mr. Vidal detected a transverse presentation, with the hand and arm in the vagina. He at once proceeded to turn the child, which was accomplished with considerable difficulty in two hours, the placenta soon following. The child was dead. He left her doing well; and his attention was drawn, on his first visit, to a large swelling bulging out beyond the vulva, which had gradually descended without any pain beyond what might be called after-pain, and no hemorrhage beyond the usual lochial hemorrhage. From the size, shape, and physical characters of this swelling, and its forming so soon after labour, Mr. Vidal concluded that it was an inverted uterus, and at once endeavoured to reduce it. He passed it within the vagina, but it soon protruded again, and other occasional endeavours to reduce it were attended with a like result. She was diligently kept in a horizontal posture; the bowels were relieved of a quantity of collected fæces; some saline medicines, and subsequently some tonic medicine, were administered with benefit, and she was allowed a sustaining diet. On the 27th of October I obeyed a summons from Mr. Vidal, and saw this patient with him. I found her rather pale, and anxious, but quite free from that kind of distress which betokened any serious lesion. Her mind was tranquil, and ready in informing; her pulse quiet; skin cool; and tongue clean and moist. The only circumstance in her pregnancy which she had particularly noticed, but without complaining of it, was that the abdomen was "fuller and harder" than usual. Since her confinement she had not suffered much pain, and there had been an entire freedom from active hemorrhage. Placing her on the back and examining the abdomen, the uterus felt hard, large, with an inclination to the right side, reaching rather higher than the umbilicus, with an even convex outline, and free from tenderness; its size, solidity, and prominence were conspicuous, and around it the intestines were distinguished by percussion. Examining by the vagina, this canal was found to be largely distended by a smooth, globular, insensible tumour, which reached as low as the vulva, but without protruding beyond it. The fingers were passed at their fullest stretch both in front and behind this tumour without reaching the os uteri, and the tumour was found to pass in undiminished size into the interior of the uterus, where of course it could not be followed. At the posterior part, the surface of the tumour had contracted some feeble adhesions to the vagina, which readily gave way under the pressure of the finger, a trifling oozing of blood following the separation. On drawing aside the labia, the lower part of the tumour was readily seen and felt; it was highly vascular, covered by a smooth unbroken membrane, and to the touch it had not a very dense consistence. A quantity of thickish mucus, tinged with blood, but free from offensive smell, came away from the vagina.

My opinion respecting this case was, that a polypus had been developed in the interior of the uterus concurrently with gestation, that it had largely and directly participated in the developmental growth of the uterus, and that it had been partially expelled from the uterus after the separation of the placenta. As there was no urgent symptom, more particularly as there was no *hemorrhage,* I recommended that we should wait a month or five weeks to see how much it lessened with the reduction of the uterine structures; and during that time she should follow Mr. Vidal's plans, retaining the horizontal posture, taking good nourishment and mild tonics, with the occasional exhibition of aperient medicine, and habitual local washing.

Nov. 24, 1851.—I again visited this lady, and found her much improved in health and strength; since last I saw her she had gone on without a bad symptom; the abdomen had gradually reduced, she had been free from hemorrhage, and had but little discharge. The body of the uterus could still be felt above the pubes, and internally the polypus was found remarkably diminished. It was now in shape, size, and consistence like a tongue, with a broad uterine attachment. The os uteri was deeply fissured, soft, and open. The shrunken polypus was as before, insensible to the touch, and the general softness of its texture showed that it was not a fibrous tumour pediculated. Mr. Vidal and I were both struck with the rapid absorption which had taken place, and although I had come prepared to apply a ligature to the polypus, we both concurred that it was better to leave it alone yet longer, and see the extent of its spontaneous retrocession.

I have not seen this patient since, but Mr. Vidal writes to me, (Feb. 20th, 1852), "On my last examination I found the tumour quite gone, and the discharge subsided; menstruation regular. She appears now in good health and spirits; good appetite; bowels free without medicine; and she walks and rides in the carriage without fatigue."

Remarks.—The complication of the growth of a uterine polypus with pregnancy may, in a practical point of view, be divided into two forms:—1, when the polypus, being attached to the cervix, is developed within the vagina, that is, all but its immediate pedicle, and *without* the uterus; and 2, when it grows *within* the womb, and is altogether concealed in its cavity. The first of these complications may give rise to hemorrhage during pregnancy; it may bring on abortion, and be the source of obstruction to delivery; and it is principally in this latter relation that it has been noticed in obstetric works. The danger of the second begins after parturition, when it may be the immediate cause of hemorrhage, or invert the womb when being expelled from its cavity, or form a tumour so much resembling an inverted uterus as to be mistaken and treated for it.

Whenever pregnancy occurs with a uterine polypus, the latter, whatever may be its structural peculiarity, and to whatever part of the uterus it may be attached, grows with an increased rapidity, its blood-vessels and proper tissue enlarging with the development of the uterine walls and blood-vessels. This is the case even when the polypus is a fibrous tumour with its cortex and pedicle only of uterine tissue, but it is particularly the case when the polypus is, as I take it to have been in the case above related, a more direct outgrowth from the womb. It is this tendency to rapid growth, and to the formation of an important complication of pregnancy, which ought to determine the removal of small polypi whenever they are detected in females not past the child-bearing season, although they may not have been attended with hemorrhage or any pressing symptom.

The management of a polypus springing from the uterus, but hanging in the vagina *during pregnancy*, must depend upon its size and the attendant symptoms. If the polypus be detected at an early period of pregnancy, of moderate size, with a thin stem, especially if it be accompanied with hemorrhage and muco-purulent discharge, it may be removed by torsion. Such a polypus may be twisted off with very little, if any, disturbance to the uterus, and it is most desirable to get rid of an increasing and dangerous evil by so simple an operation. The following case illustrates this form.

I was requested to see a lady in the early part of 1851, who had been married nearly five months. She menstruated once after her marriage, and was at the time I saw her between three and four months gone in pregnancy. Since her supposed pregnancy she had been troubled with frequent small bleedings, so that she was rarely clear for two days together, and lately they had become more constant, especially after any exertion or sexual coitus, which had alarmed her, and created some doubt of her being pregnant. She was not anæmiated by the bleedings, and her general health was good, her pregnancy quite clear, but growing from the anterior wall of the cervix uteri, by a thin pedicle, was a highly vascular polypus, in size and shape something like an Orleans plum, which had obviously been the source of her bleeding. She was kept in the horizontal posture for two days, a slight aperient was given, and, having passed a speculum, so as to enclose the polypus, I carefully twisted it off with a pair of forceps which I habitually use for the purpose. An unimportant bleeding followed which was left to stop spontaneously, and she recovered without further trouble; she was kept at rest for a week afterwards, and has since been safely confined.

But although a polypus may thus be removed by torsion without exciting abortion or any other morbid result, yet I regard the dangers which are likely to follow the detachment of a larger growth, with a thick stem, by ligature, which would be the only practicable operation, as very great, and such as ought to deter us from undertaking it, unless the dangers from its remaining until after delivery are such as to justify a great hazard to overcome them. The large development of the venous system of the uterus, which is directly continuous with the veins of the polypus, exposes the veins themselves to inflammation in the course of the separation of the polypus, or to the direct absorption of putrescent matter. Add to these the imminent hazard of abortion, and it will be readily allowed that a patient is exposed to the most perilous diseases from such an operation.

[Dr. Oldham, in illustration of these remarks, relates the following case :—

The patient, aged 26, mother of one child, was suddenly seized with profuse bleeding from the uterus. This continued for eight or ten days. On examination a polypus was found the size of a small apple growing from the anterior lip of the os uteri, by a thickish pedicle. A ligature was applied, and in two days the polypus separated. No idea of pregnancy had been entertained when the ligature was applied. Very incautiously, the patient got up and moved about the room, pains came on, and an ovum was expelled of about six weeks' development, symptoms of phlebitic metro-peritonitis ensued, and in spite of all treatment she died four days after the abortion. Dr. Oldham observes that there are several points deserving attention, where the polypus has been enclosed in the uterine cavity, and grown with the progress of gestation.]

Polypi thus placed may acquire during pregnancy, a very large size. They grow very rapidly, and become as big as a large melon or cocoanut. This was the case in the instance above related, and also in a specimen which I placed some time since in the museum of Guy's Hospital, the particulars of which are detailed in the second volume of the 'Hospital Reports.' In this specimen the mass of the polypus was made up of fibres in every respect the same as the muscular fibres of the uterus, loosely conjoined, and freely permeated with arteries and veins, the latter in their section resembling the uterine veins. It had been, in short, a growth from the womb, and directly participated in the enlargement of its elementary structures and the volume of its circulation. The polypus in the case above related, I believe, closely resembled the preparation I now refer to, and, like it, was a direct outgrowth from the womb, without any portion of a fibrous tumour, which would not have been absorbed.

A polypus acquiring so great a magnitude gives no sign of its presence during gestation, beyond the fact of the uterus being larger and harder. Mr. Vidal's patient *felt* "fuller and harder" in this than in her former pregnancies; but there is nothing in the volume of the polypus, with its gradual growth, so to distend the uterine cavity as to incommode the patient, or render pregnancy more painful, or excite a premature labour.

In Mr. Vidal's case there was a transverse presentation, and it may perhaps be assumed that this was caused by the presence of the polypus, although other recorded cases have not been attended with any such complication. Still a large solid inert mass within the cavity of the womb might well divert the force of the first contractions of the uterus from their even bearing on the fœtal ovoid, which is necessary to secure its vertical position. To turn the child under such circumstances appears to have been attended with unusual difficulty.

It is not, however, until after the placenta is separated, that the existence of some complication becomes apparent. The uterus, after the birth of the child, may have been felt to be large, but not so large as to suggest the idea of twins. Experienced accoucheurs, such as Mr. Vidal, have not had their attention *arrested* at this stage. A bulky placenta with thick uterine walls, will leave often a large uterine tumour after the birth of the child, but the third stage goes on well, the placenta is separated, passes into the vagina, and is withdrawn without difficulty, and without excessive bleeding. When a large polypus is still within the womb after parturition, the uterus will probably at first close over it, retaining it in its cavity, and the hand passed over the abdomen in the usual way will detect the great volume and general solidity of the uterus. If the uterus be left alone, and not excited by attempts to explore its cavity, it may be expected, in time, varying in duration, to expel the polypus, into the vagina, or beyond it, according to the size of the polypus, and the degree of mobility of its pedicle. This process may be accomplished, as in the case related, without much suffering, and without hemorrhage, or as in other cases, with exhausting uterine efforts and copious bleeding, in the course of which it is just possible that the polypus may be separated from its uterine attachment.

The treatment of this complication is well illustrated in the case. It was based on non-interference, and the more completely this is carried out from first to last, the greater likelihood is there of a favourable result. When the uterus remains unusually bulky after delivery, leading to the conviction that it contains some solid body, and from the absence of the fœtal membranes, and fœtal heart, that it is not another ovum, it is far better to leave the uterus alone, than to introduce the hand to try to make out exactly what it is, or to endeavour to arouse the action of the uterus by ergot of rye, or any local irritation, with the hope of expelling it. As long as the uterus is tonically contracted, it may be very large, without any hemorrhage from its veins, and, as long as the polypus is undisturbed, there is comparatively little danger, with its rapidly diminishing circulation, that *it* will bleed. If, however, attempts have been made to draw it from the uterus, or the uterus has been in any way irritated, there is then much danger of additional complication, either from hemorrhage, as the result of irregular uterine contraction, or a partial laceration of the pedicle of the polypus, or from the exhaustion of long continued uterine efforts, or from both combined. The danger, too, of inversion of the uterus is not remote. The safety of the patient consists in the quiescence of the uterus, and the non-disturbance of the polypus, and the present case shows not only that its volume may diminish, but that a very large tumour may be absolutely effaced. Every effort ought to be made from the commencement, by strict rest, mild sedatives, and the avoidance of all local irritation, to secure this end. It may be, however, that in spite of our best exertions, formidable hemorrhage and acute suffering may accompany the partial expulsion of the polypus, and its removal may be urgently required. When this is the case the polypus may be twisted off if its pedicle be small, but if driven to the performance of any operation at a time when physical injury to the uterus must be looked upon as hazardous, I should prefer to apply a ligature around the pedicle to prevent hemorrhage, and then remove with the knife the body of the polypus.—*Guy's Hospital Reports, Vol.* 8, *part* 1, *p.* 69.

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ADDENDA.

139.—EXTERNAL USE OF CHLOROFORM.

By Dr. Channing.

[Chloroform externally is exceedingly useful in allaying local pains; in some cases the pain does not return. Applied locally, it acts as an anæsthetic, rendering the part perfectly insensible to the violence done to it. Dr. Channing relates a case of uterine disturbance attended by severe pain both in and about the pelvis, and also pain in the spine. The former symptom was relieved by lying down, but the dorsal pain remained as bad as ever. He says:]

For this I recommended the external application of chloroform over the whole course of the spine which was involved in the disease. The effect was immediate and complete. I saw this patient a few days since, November 1851, and found her well in regard to the back, and speaking of herself as very well in all respects.

In this case the pain in the spine was doubtless the result of the reflex function, the womb being the original seat of the malady. But when the uterine affection was relieved, the sympathetic dorsal difficulty remained, and only yielded to the use of chloroform. The quantity used was an ounce.

Case 2. Mr. ——, aged 22. A very feeble man in appearance; very thin in flesh; pale; and an almost constant sufferer from headache. This pain occupied but a small part of the head arc, and most frequently the right temporal region. It was accompanied by constant nausea, frequent vomiting, great prostration of strength, and demanding for its present relief firm pressure over the part affected.

In the last attack, which happened a few weeks since, I applied chloroform to the seat of pain. A few drops were applied by means of a handkerchief. The immediate effect was redness of the skin and a tingling sensation in the spot. The pain was at once relieved. He raised his head from a friend's shoulder, opened his eyes, looked round, and expressed his utter surprise and deep pleasure at the entire relief which had followed the use of such apparently simple means. He called on me the next morning, and reported himself perfectly well. I have not been called to him since.

The relief in this case was *sudden* in its occurrence, as it had been in others. It has not been less permanent on that account, or in such cases. It has acted at once to remove pain, and with a rapidity which distinguishes the relief entirely from that which follows etherization by inhalation. The brain does not seem to have anything to do with the matter. Local pain is abolished, and at once; and the nerves have no story of suffering to tell to the brain. The sentinel is at his post, but his function is not needed. The part does not lose its natural sensibility at all. On the contrary, it feels the tingling, the irritation of the chloroform, just as distinctly as at first. Nothing has been lost of natural power and healthful function. All that has happened is this: the pain has ceased, and the patient is well.

Case 3. 1851. Mrs. ——, aged 36. Has long suffered from uterine disturbance. The most exhausting and annoying symptom was leucorrhœa. This was a perpetual drain, and made her exceedingly uncomfortable. I was occasionally consulted in this case; but, as her general health continued tolerably firm, no systematic attempt at recovery was thought necessary by the patient. She became pregnant, and supposed herself between two and three months advanced in that state, when hemorrhage and severe uterine pain occurred, on account of which I was desired to see her. She had lost a great deal of blood before I saw her. I found her perfectly blanched—lips and whole face; skin cold; hands bloodless; faint; almost pulseless. Various means were used, and the hemorrhage was stopped. I considered her case, however, so pressing, that I passed the whole day in the house. She now began to complain of pain in the back. This had exacerbations in the night, becoming too severe to allow of sleep, and continuing for three or four hours without mitigation. For this I recommended chloroform, which was applied by means of a handkerchief, and with excellent results. After three applications, on as many days or nights, the pain ceased, and has not now, at the end of some weeks, returned.

Case 4. Mrs. ——, about 40. Last child, thirteen years old. I was called in consultation in this case, because of vomiting, attending pregnancy, all of about three months' standing. The vomiting ceased under treatment, and food was taken in sufficient quantities, and was well borne by the stomach. A comatose state supervened, which increased, with entire abolition of mind, and death was its consequence. The termination of cases of fatal vomiting by coma has occurred in many instances which have come under my notice or knowledge. I do not, however, recollect a case in which apparent recovery has been followed by coma ending in death.

This case is reported here, because of the use of chloroform for one of its symptoms. This was pain in the back, in the course of the spine. It was very severe, taking the lead, in distress, of all the rest. For this pain I prescribed an ointment, if so liquid a substance as was produced by the union of lard and chloroform deserves the name. It was applied twice or thrice a day, and with most excellent effects, the pain entirely disappearing. It was used in the same way in the first of these cases.

Case 5. Mrs. ——. Has had four premature labours; the first at about five months, the fourth at about the eighth. There were all still-born, or neither of them lived over an hour or two. The fifth pregnancy was terminated at the full time by the birth of a living, healthful male child, on the 17th October, 1851. I visited her for the usual time after delivery, and left her in rapid progress towards perfect recovery. I was called to see her on the 27th October, and found her apparently very ill. Pulse rapid; skin hot; face flushed: much pain in head and in both breasts, making all attempts at nursing absolutely agonizing. A thick eruption had appeared over the whole chest. Upon examination, the breasts were found exquisitely sensitive, not bearing pressure at all. Sufficient pressure, however, was made to enable me to ascertain that there was no unusual hardness, or, in short, any other sign of disease in either organ. The pain was confined to the skin, and seemed to involve its whole tissue. The eruption proved to be a very full crop of sudamina of unusual size, resembling exactly an exaggerated form of the same kind of eruption in typhoid fever. Various means had been used before my visit, but without any good effect.

I recommended chloroform, and with the best effects. I regret I had not used it in combination with lard or rose ointment, both of which I have used, and for the reason that it may be more extensively applied, with more continuous benefit, and with less of the unpleasant tingling which so generally accompanies the uncombined substance.

On what did this aching pain depend? It resembled that which at times makes *shingles* so very distressing. Was it owing to the eruption? I have never known the skin in sudamina to be complained of as the seat of pain, and I have examined it when covered with this eruption after a manner to have produced pain had morbid sensibility existed. In Mrs. ——'s case, the pain was persistent, being much aggravated by handling, though never so gently. The pain in this case subsided, under the use of chloroform, long before the eruption disappeared.

Case 6. Mrs. ——, aged 25, married very young, and had a premature labour within a year or two afterwards. I was desired to see her, October, 1851, on account of an enlargement of the abdomen, on the left side, and for various signs of ill health. The tumour was found to be an excessively enlarged spleen. It filled the left hypochondrium, extending forward to the epigastrium, and downward to Poupart's ligament. Its anterior boundary was the linea alba. From this point or line it extended laterally and backward, filling accurately one whole side of the abdomen. She had been always regular in regard to the catamenial function, with the exception of the last two periods. Nausea, vomiting, and other unusual and disagreeable feelings have led to a suspicion that pregnancy may exist. She had recently taken a fatiguing journey for three days, and has suffered much since. The pain has been most troublesome in the head, and in the seat of the tumour. Diarrhœa and flatulence, with general anasarca, involving the face and the head, are also present. Chloroform to the forehead and the seat of the tumour has given her much comfort, more than has been derived from any other means used.

Case 7. Mrs. —— was delivered of her second child, a daughter, December 25, 1850. Since that event she has been liable to diarrhœa, which, however, has not impaired her general health. She has long been annoyed by a spasmodic catching of her breath, almost resembling hiccup, but producing more general agitation of the body than does that. After her last confinement, this affection was for some time unusually troublesome.

I was called to see Mrs. ——, October 6th, 1851, and found her apparently very ill. She was hot; feverish; pulse rapid; severe pain in head, which it was attempted to relieve by bandage and different washes; vomiting large quantities of watery fluid, colourless, having floating in it masses of a dense, white substance, resembling coagulated milk. No milk has been taken for some time. Copious diarrhœa, with very severe, intermitting pain around the umbilicus. No sleep at night, and for a week or more has suffered many of present symptoms. Means were used to check vomiting and diarrhœa, but without any useful result, and I determined to try chloroform externally. Its effect was most grateful. The head, stomach, and bowels, became easy. They were, in short, relieved of all their trouble. This was in the evening. At my morning visit, I found Mrs. —— up and dressed, nursing her child; and, except weakness from so much suffering, and forced total abstinence, in her usual health. I forgot to mention above, that, during this very severe attack, the catching respiration revived, as it does, I was informed, whenever she is at all indisposed, and continued till she recovered.

Case 8. Mr. ——, of strongly-marked nervous temperament; very *impressible;* an excellent mesmeric subject. I was called to this gentleman on account of violent pain in the head, and to which he was very liable. I found him in bed. He could not sit up at all, and any noise in the room, or house, or jarring of the furniture, increased the pain to agony. Pressure to the head gave some relief. While I was examining his case, he said he could bear his sufferings no longer; that he must get up, and walk round the room; do anything which might afford some relief. He was hot; skin dry; pulse rapid. I sent for leeches; but before they could be got, and because of the increased suffering, I made a free application of sulphuric ether to the forehead. The relief from its use was soon apparent. It was strongly expressed, until, worn out by his long agony and sleeplessness—and now relieved—he fell asleep; and, after long and perfectly quiet rest, awoke without pain, and next day went to his business.

The relief here was quite as striking as from chloroform. A good deal of ether was used, and, indeed, the patient may have found some of the relief he experienced in the unavoidable inhalation of the ether vapour. This was not at all the case in the instances in which chloroform was applied. The quantity was very small, hardly damping the handkerchief beyond the limits of a twenty-five cent piece, and with the wet surface close to the skin, and often under the bed and other clothes. This case is reported, not on its own account only, but also to allude to another mode of employing local etherization. A professional friend of the highest reputation amongst us, and very cautious in forming opinions concerning the direct effects of remedies, once told the writer that he had been much gratified with the agency of sulphuric ether in procuring sleep in cases in which he was desirous to avoid the employment of opiates. His method was gently to have the forehead and face wiped with a cloth damped with sulphuric ether, and very often most grateful sleep followed this use of it.

Case 9. Mrs. ——, aged 19, in seventh month of pregnancy. Of excellent health before marriage, she has suffered, in an unusually severe form, the signs and diseases of pregnancy. Vomiting occurred very early, and such was its excess that it seemed impossible that she could live through its ordinary continuance. To this succeeded ptyalism, which has been quite as uninterrupted and severe as was the vomiting. She is constantly in bed having no power to sit up. Violent headaches; pain in abdomen; in back; in short, pain occurring in all possible localities, has made her life for months wretched. Having tried the ordinary means of diminishing these troubles, I have at length applied chloroform. The pain in the head has entirely ceased since she began this course. All other means are omitted. Pains elsewhere are sensibly diminished. She has no nausea, no vomiting, and the ptyalism is less. She bears milk, in small quantities, quite well on the stomach. As the pain on the back and abdomen continues to recur when the effects of the chloroform have passed away, I have to day, November 10, 1851, directed an ointment of chloroform, two drachms to an ounce of lard, to be applied to the spine and the epigastric region.

Case 10. This case occurred in the person of the writer. The disease was toothache. It was in one of its severest forms; had continued many hours; extended to the temples and lower jaw, and made the least application to it, a touch merely, exquisitely painful. Chloroform on a handkerchief was applied to the third branch of the fifth pair, where it passes out upon the face, and to its ramifications, and especially to that part of the cheek which was over the diseased tooth. The usual sense of tingling and burning was experienced, and the skin became slightly red. After a few minutes, a most grateful sense of relief was experienced. The pain disappeared as entirely as it does after an aching tooth has been drawn. No tenderness remained. The tongue or finger could be freely pressed against the tooth, and without producing any uneasiness. Chewing was possible and grateful. Cold water gave no agony. It may be inferred that I have exaggerated the suffering. Said a patient to me once, to whom I had suggested the idea that she might be in error as to her suffering, "*Sir, I know by my feelings how I feel.*" I can say that what I have said of the pain, and the relief from chloroform, need not be questioned. I felt and understood both.

Relief continued for some time. Pain recurred, but it was at once treated as above, and at once relieved.

Of the mode of applying chloroform endermically, a word. A handkerchief fresh from the drawer, and a phial of chloroform are all that is needed. Apply the handkerchief to the open mouth of the phial, and invert the latter so that the chloroform may wet a spot in the centre of the cloth. Do this two or three times, and then apply it to the seat of pain by moderate pressure and without friction, Let it remain until it is dry, and then wet and apply it again if need be. Ordinarily, the pain soon becomes less, and will even be found often to disappear entirely with no further application of chloroform. Some redness is commonly produced, and some tingling or smarting. These, however, disappear when the handkerchief is removed. To prevent evaporation, and especially to prevent inspiration of the chloroform, always cover the cloth which contains it with another dry one.—*American Journal of Med. Sciences, April,* 1852, *p.* 353.

140.—*Chloroform in Operations.*—[Mr. Le Gros Clark gives, in a letter to the editor of 'the Lancet,' the following practical hints on the administration of chloroform. He says :]

I have been in the habit of using chloroform freely, but not indiscriminately, in operations; and have for a long time adopted the following precaution in its exhibition.—Assuming as a general principle that sensation and a conscious exercise of volition are simultaneously suspended, I direct my patient to make some voluntary effort, such as raising his hand, or squeezing that of an assistant,—giving him to understand, that directly he ceases to do so at command, the operation will be commenced. The patient readily enters into this arrangement, and never fails of efficiently executing his part. If the operation be brief, it is unnecessary to continue or repeat the inhalation; but if protracted, this state of complete or almost entire insensibility to pain may easily be maintained by even an unpractised assistant.

The obvious advantage of this plan (which doubtless has been acted upon by others beside myself) is that of affording a sure and very simple criterion by which to judge of what is a sufficient dose of the anæsthetic. The effect is attained without risk, though I admit that patients are sometimes less docile than where the nervous system is more entirely under the influence of the free and prolonged exhibition of chloroform. I have never known it to produce sickness during its inhalation in this moderate quantity, and but rarely even nausea or headache afterwards—a point of no trifling importance, where the operation is serious.

The effect of chloroform on the system appears to be very analogous to, if not absolutely identical with, that of alcoholic drinks taken into the stomach, the intoxication being more transient when produced by the inhalation of the vapour. I believe that we may thus account for the occasional shrinking of patients, and their expressions of suffering under operations when they afterwards declare that they have experienced no pain. They do feel, probably but slightly, yet forget all about it, as the drunken subject of a severe accident wonders where he is, and what has happened, when he finds himself, on recovering his consciousness, within the walls of an hospital. As an overdose of alcohol is not a desirable introduction to the treatment of a grave accident, so I think we should be specially cautious in the administration of chloroform when about to perform a serious operation. I do not regard the shock which the physical frame sustains from the infliction of pain, as *per se,* of very material importance; I do not mean to undervalue the boon on this account; but I more highly estimate the moral relief which the anticipation of undergoing a painless operation affords. Patients who have not felt the knife certainly complain more afterwards of the wound inflicted. Probably this is explained by the relative intensity of the suffering, as experienced during and after an operation by those who have not had chloroform.

Mr. Carpenter, house-surgeon to St. Thomas's Hospital, who has been in the habit of superintending the administration of chloroform in our operating theatre, informs me that the indications afforded by the pulse, respiration, and state of the pupil, entirely coincide with the simpler test which I have referred to. Mr. Carpenter adds that he considers there is no risk, so long as the pulse and respiration retain their natural relation to each other in point of frequency, even though both be accelerated; but he regards an increasing rapidity of pulse accompanied by diminished frequency of respiration, as an unequivocal indication that the administration of the chloroform should be immediately suspended.

An instrument such as that manufactured by Mr. Bigg, is simple and efficient. It is provided with two india-rubber discs, which act as valves in an opposite direction. The inspired air is thus freely admitted over the moistened sponge by one aperture, and the expired air is expelled by the other.

From one to two drachms I have usually found sufficient to effect the required purpose; but this, it is well known, varies extremely in different individuals. In one case under my care, complete insensibility was produced almost instantaneously. The patient was partially under the influence of a very moderate opiate, which perhaps rendered him more susceptible of the agency of the chloroform. If this be so, might not the combination be desirable under some circumstances.—*Lancet, May 29, 1852, p.* 531.

141.—*On Calomel and Soda as a Cathartic.* By DR. HUNT.—Dr. Hunt draws attention in this paper to the remarkable increase of purgative power which calomel acquires by the addition of bicarbonate of soda. So small a dose as two grains, combined with from ten to twenty of soda, acts most efficiently, without inducing the griping stools which calomel does when given alone. After the bowels and liver have been well acted upon, the medicine loses its power, and should be discontinued. Dr. Hunt believes that the soda exerts some power in preventing the mercury acting upon the gums.—*Boston Journal.—British and Foreign Med. Chirurgical Review, Oct.,* 1852, *p.* 555.

142.—*Turpentine in Collapse.*—By CHARLES W. WHITBY, Esq., Surgeon, Ottery St. Mary. [Mr. Whitby relates the following case of collapse occurring in a case of measles. The patient was a little boy about three and a half years old. He says:]

On putting my ear to his chest, the air entered both lungs, but crepitation was most diffuse throughout them, and towards the base of the lower lobes it entered but faintly. Under these circumstances, wishing, if possible, to clear the bronchi from secretion, and yet fearing the lowering effect of any emetic alone, I was induced to combine with two drachms of ipecacuanha wine about forty mimims of sp. terebinthinæ, having very lately seen the powerful manner in which this medicine acts in rousing parturient females when almost dead from hemorrhage. I also gave the child a mixture, consisting of vinegar, ammonia, and squill, and ordered brandy in small quantities. But the action of the ipecacuanha and turpentine was most surprising; the child seemed to rally immediately, vomited, and was much relieved. The next morning it was better, but towards the afternoon seemed to be relapsing into its former state. I then again administered the turpentine, with the same effect, and from that period he has gradually progressed to convalescence,—no stranguary or unpleasant symptom followed the use of the medicine.—*Med. Times and Gazette, July* 3, 1852, *p.* 21.

143.—*On the Employment of Manganese.* By MM. Petrequin and Burin.—In this paper M. Petrequin brings forward additional evidence of the greatly increased efficacy which the combination of manganese with iron confers upon the latter metal. M. Burin has recently had a memoir which he presented to the Academy, upon the condition in which manganese exists in the blood, very favourably reported upon by M. Lecanu. According to M. Burin's analysis, 1000 grammes of blood are thus constituted as regards this substance:

	Weight of Globules.	Oxide of Iron.	Oxide of Manganese.
Plethoric man	143·500	1·360	0·071
Normal blood	128·200	1·220	0·060
Chlorotic girl	63·980	0.500	0·025

M. Burin has furnished several formulæ for *ferro-manganese* salts, which are now obtainable in Paris, and are as easily administered as is iron alone—their only drawback being their high price.

This metal being as much a normal ingredient in the blood as is the iron, its administration is indicated in chlorosis and other cases, in which both substances are in deficient quantity; and M. Petrequin believes that the resistance which many of these cases offer to iron, and their frequent relapse, may be obviated by this addition, by the use of which also a smaller quantity of iron is made to suffice. He objects to the administration of this substance unaccompanied by the iron; and he regards the statement that sometimes the manganese, sometimes the iron, is deficient in quantity in the globules, as purely conjectural—the analysis showing thus far, that both substances are alike wanting. M. Petrequin has found these combined medicinal bodies especially useful in blood-diseases, such as the chloro-anemia after hemorrhage, operations, metrorrhagia, &c. They are of remarkable efficacy in the chlorosis which appears about puberty, a malady which is far more common even among male adolescents than is supposed. It is also met with at the critical period of women, especially when passive hemorrhage prevails. Its efficacy is also remarkable in the anæmic cachexia following prolonged intermittent fever, as also attendant upon prolonged suppuration, and on strumous and cancerous disease. In the disordered states of the circulation met with in chloro-anæmia, which are sometimes mistaken for organic disease, the ferro-manganese preparations combined with digitalis or other substances, are of great utility. The various neuroses of the digestive organs, which complicate the chlorotic state, are frequently relieved; and in the disorders of the nervous system, from various descriptions of excesses, they are found highly useful.—*Bull. de Therap.* —*British and Foreign Med. Chirurgical Review, July*, 1852. *p.* 274.

144.—*On Disguising the Taste of Quinine.* By M. PIORRY.—A piece of chocolate should be half-masticated, and retained between the cheeks and the teeth. The quinine draught is to be rapidly swallowed ; and then the mastication of the chocolate is to be completed, so that it may be swallowed also. The taste of the quinine is thus hardly perceived.—*Bull. de l'Académie.—British and Foreign Med. Chirurgical Review, July*, 1852, *p.* 276.

145.—*New Mode of taking Cod-liver Oil.* By GEORGE SELWYN MORRIS, Esq., Wye, Kent.—[The vehicle which Mr. Morris has found most valuable for the administration of this disagreeable and generally nauseous remedy, is a weak infusion of quassia chips. He says:]—I have only found it fail once, and I have given it many times, merely floating the oil on a tablespoonful of the infusion; the quassia being a nice light tonic, the stomach cannot in any way be impaired by its use, especially in so small a dose. I was induced to try this remedy merely from the fact of a lady whom I was attending having (from a whim of her own) taken her oil floated upon a dose of quinine mixture, and being retained upon the stomach every time she had occasion to take it,—a circumstance which had never occurred before to her with any of the other measures adopted; and she is at the present time taking it in the same way with the most beneficial effect. Feeling, as I did, that the bitter extractive was the principal agent in allowing the oil to be retained, and feeling also, that the quinine might not be suitable in all cases where the oil would be, (let alone the expense of the former,) I adopted this *placebo*, and have every reason to be satisfied with the result.—*Med. Times and Gazette, Sep.* 11, 1852, *p.* 271.

146.—*On a New Mode of applying Leeches.*—By DR. C. F. SLOAN, Ayr.—[As it frequently happens the leeches may be deficient in quality, Dr. Sloan has converted, by the following plan, very indifferent specimens into most efficient blood-suckers. He says:]

It struck me that, as leeches are remarkably influenced by atmospheric changes, it might be worth while trying the experiment of partially exhausting the air over them, and thus inducing the sensation of a low barometer. On covering them with a cupping glass, and by means of the air-pump producing a moderate degree of rarefaction, an immediate change in the style of sucking took place; the leeches displayed an activity I have rarely seen equalled by those of the best quality when applied in the usual way; they rapidly became fully distended, and fell off. By continuing the exhausting process afterwards, which is a common enough practice, a sufficient quantity of blood was readily obtained; and I remarked that the erysipelatous appearance, which usually followed leech-bites in this patient was prevented.

It is quite possible that the increased activity under the exhausted cupping-glass may arise from the skin being rendered more vascular, and thus yielding its blood more readily; or we may even view the leech in these circumstances as an elastic sac, communicating with the circulation by a firm canula, so that the blood may flow into the animal without much exertion on its part; but whatever the cause, the result will be found satisfactory. I have never had occasion to try the effect of snipping off the tails of the animals under this plan, but possibly it would be eminently successful.

The operation is almost as quickly performed as cupping, and has this advantage, that it requires no dexterity. I think any nurse of ordinary intelligence might acquire the necessary skill in a single lesson.

In charitable institutions this plan would be especially advisable, as by it two leeches might be made, on the average, to do the work of three, thereby effecting a considerable saving, and the necessary apparatus would always be at hand. Nothing could be better for the purpose than those cupping instruments, in which the vacuum is produced by an air-pump. Increasing the vascularity of the skin by a cupping-glass previous to applying the leeches, seems to make them bite more readily, probably by rendering the odour of the blood more perceptible.—*Monthly Journal of Med. Science, Aug.*, 1852, *p.* 126.

147.—ON ONYCHIA.

[Dr. Moriaty of Dieppe, says, that if a strong caustic, say the Vienna paste, is applied to the fungoid growth, at the edge of the nail, suppuration is quickly produced under the nail, by which its attachments become speedily loosened and it may be then easily removed.

Mr. W. Tagert, Surgeon to Mercer's Hospital, Dublin, in a letter to the Editor of 'the Medical Times and Gazette,' refers to the opinion of Mr. A. Colles, formerly professor of surgery in the Royal College of Surgeons in Ireland. In a paper entitled 'Observations on some Morbid affections of the Great Toe-nail,']

He has described three different diseases to which this part is subject, viz:—

1st, Fungous ulceration at the angle of junction between the anterior and external edge of the nail, commonly called "the nail growing into the flesh."

2ndly. Another morbid affection, seated at the anterior and inner edge of the great toe-nail, causing lameness and much pain on pressure. In this latter, the inner angle of the nail rests on a hard white mass of laminated horny cuticle which can be readily picked out in bran-like scales, exposing a small cup-like cavity without ulceration. Mr. Colles has never seen this latter disease affect the outer angle, nor the former (the fungoid) affect the inner angle.

3rdly. He treats of onychia maligna depending on a morbid condition of the secreting matrix of the nail. He states that he has never known an instance where the fungous ulceration already alluded to has extended, so as to induce the onychia maligna.

We thus observe that these three affections have each their distinct and peculiar site, and never mingle or merge into each other.

I shall now direct attention to the modes of treatment advised by Mr. Colles in these painful diseases.

I shall commence with the fungoid ulcer. After detailing the different modes of management adopted by Desault, Wardrop, Sir A. Cooper, Dupuytren, and Liston, and stating his objections to them, he says, a permanent cure can always be made by a very simple operation, and one comparatively free from pain, by excising only so much of the nail as is already detached from the matrix; "all of this portion, as well as that embedded in the fungus must be removed."

For the excision of the detached portion of the nail, he employed the following instruments: a spatula, strong forceps with flat blades, a probe with a thin flat extremity, and a strong crooked scissors.

An assistant, with the spatula, presses down the fungus; the operator, with the forceps, seizes the edge of the portion of nail to be removed; the thin flat probe is now passed beneath the nail, and towards the outer edge, as far as it will go—this informs us to what extent the nail is detached—a blade of the strong crooked scissors, with sharp point, is passed under the nail as far as the probe went. With one stroke he cuts off the detached portion of nail, which is removed by the forceps. Should this attempt fail to remove it, pass the probe again, and re-introduce the scissors as high as they can be pushed. A second cut will complete the separation. The only dressing is a small bit of lint, which is to be pressed firmly between the fungus and the edge of the nail. In a few hours the pain is gone, and the patient can walk about in three or four days without uneasiness. The dressing need not be removed until the fourth day; another bit of lint is to be re-applied. In the course of ten or fifteen days the fungus will be gone, and the parts nearly restored.

Mr. Colles alludes to an occasional unpleasant occurrence, which I should not omit to notice. In four or five days after the operation, the patient complains of pain in the toe. On removing the dressing, a small portion of a whitish substance is seen rising up through the fungus. He regards this as a sort of accessory ungual filament, arising close to the original nail, from the anterior and outer border of its matrix, which is now altered in texture and direction. It is so soft that it readily tears and breaks. He directs us to seize it with the torsion forceps, and to excise with one cut of the scissors passed well beneath it. The lint dressing is to be re-applied, as before, and the case now proceeds favourably to a cure.

I may here remark, that I have on various occasions performed this operation with the precautions laid down by this surgeon, and in every instance, hitherto with the most favourable results, and I fully coincide in opinion with him, that there is no reason to apprehend a relapse, if the operation has been efficiently performed; and further, that I have not met with any example where this fungoid ulcer engaged the inner angle of the nail, and that it is altogether distinct in its site and nature from onychia maligna.

The treatment of the second form of the disease engaging the great toe-nail, (namely, where the anterior and inner angle rests on a bed of white horny cuticle), is simple enough, and consists in scraping away, or picking out, with a suitable instrument, the laminated cuticle, and cutting away the bulbous angle of the nail. Great care must be taken from time to time to prevent any unhealthy growth of the cuticle or nail. This affection, apparently trifling, often causes great pain and lameness in walking, aggravated by the pressure from the shoe. Mr. Colles has known this affection mistaken for gout, particularly by persons where an attack is expected or even desired.

The treatment of the third form of disease, onychia maligna was conducted by Mr. Colles in the following manner :—He insists on confinement to bed during the entire treatment as essential. He poultices the toe for two or three days, then cleanses the ulcer thoroughly by means of a syringe and a stream of tepid water; he now cuts away as much of the loose nail as he can without irritating the surrounding sensitive surface. He next fumigates the parts by means of the mercurial candle, containing ʒj. of the hydrarg. sulphuretum rubrum (olim cinnabar) to two ounces of wax. This fumigation is employed by means of a funnel, night and morning, After each fumigation the toe is enveloped in a a piece of lint spread with spermaceti oil.

In four or five days the whole part will be much improved, and the discharge from the ulcer healthy and purulent. The fumigation is still persevered in, and all projecting portions of nail closely cut; this latter is essential. In proportion as the ulcer improves, so does the condition of the growing nail. For some time after the general surface of the ulcer is healed, there may remain small spots of ulceration, generally at the angles, around some white germs of new nail. The full power of the mercurial vapour should be directed against these points, by adding a small conical ivory tube to the funnel. The author states, that this plan of treatment never failed to cure during his employment of it for some years.

I must now, in candour, state, that the mercurial fumigation has not been so uniformly successful in the hands of other surgeons as Mr. Colles's experience would lead us to expect. I am aware that in a few instances it has failed; indeed, the same may be said of every mode of treatment, local or constitutional. In some cases of onychia maligna, especially if of long standing, I believe there is no hospital surgeon of experience who has not met with occasional examples of this disease which have baffled all his attempts to cure, especially among children of the poorest class; the constitution being often in such a cachectic state, the soft parts so extensively disorganized by long-continued unhealthy inflammation, ulceration, and sloughing, accompanied with caries of the subjacent bone, that amputation of the toe is our only resource. I admit that such cases are exceptions, and that in an overwhelming majority of instances, the disease is amenable to judicious surgery.—*Med. Times and Gazette, Sept.* 4, 1852, *p.* 243.

[The following successful plan of treating inverted toe-nail is mentioned by an anonymous writer in a letter to the editor of the 'Medical Times and Gazette.']

This painful state of things owes its origin to one of two causes, as a general rule; occasionally to both, as well as to others. These are, pressure from tight shoes, and an erroneous plan of cutting the nail.

The first can be avoided, the second corrected. The toe-nail should be cut straight across, and not dug out at the sides in the way the finger-nails are usually cut; it should be sufficiently long to support the soft parts at the extremity of the toe; the angles will then overlap the skin on either side. So much for preventive measures.

Now for treatment—the object being to get the nail into the state above described. When the nail has been constantly cut at the side, small sharp-pointed pieces will sometimes be found imbedded in the thickened cuticle or inflamed cutis. These must be extracted with forceps; and where the ulceration is extensive, there will be much difficulty in managing the case without removing part of the nail. In ordinary cases this may be dispensed with. All that is gained by removing part of the nail is, the removal of the cause which opposes the healing of the sores. The new nail must afterwards be trained, or the evil will be renewed with its growth.

My plan of proceeding is, to scrape the nail as thin as I can on the side affected. I then divide it with a knife from root to extremity, which, with patience and care, is a painless proceeding; thus partially separating about one-third of the nail, which, being rendered pliable by the previous scraping, I gently but perseveringly elevate at its extremity, and where inverted, daily, or instruct the patient so to do; at the same time keeping that part of the nail well scraped close to the root as it continues to grow. By these means, the nail is gradually brought to overlap the soft parts, and thus the ill is remedied. Where avulsion of the nail has been practised, the new nail should be treated as above, viz., scraped and its edge elevated; a little cotton may be inserted beneath the edge if necessary. Ointments and poultices I have found unsuitable appliances; they render the parts tender and irritable. Spirit and astringent lotions sometimes appear to expedite the healing of the ulcers. Caustics are occasionally requisite, where the granulations are exuberant or flabby; but the removal of the source of irritation usually renders special treatment of the ulcer needless.—*Med. Times and Gazette, Aug.* 21, 1852, *p.* 198.

[A correspondent of the ‘Med. Times and Gazette’ mentions the following plan of treating this condition which has usually been successful in three or four weeks.]

The patient is requested to foment the toe well with hot water, twice daily, for two or three days; I then apply the argent. nit. not only over the ulcerated surface, but also underneath, and over the nail: the advantage of applying it over the nail is, the horny texture of the nail becomes so softened that it can be cut if necessary, as easily as brown paper. Should the disease be extensive, the nitrate is rubbed over the whole of the nail, and the surrounding healthy skin, as I have observed that, by procuring a coating of the nitrate over the skin surrounding a diseased surface, much benefit results,—the absorbents being apparently excited, and thereby materially assisting the peccant part. The nitrate should not be rubbed over too long so as to produce excoriation,—the primary object being to obtain, if possible, a dry coating; and, with that view, after each application of the nitrate, the toe should be left exposed for half an hour. I never use any other dressing than a piece of soft lint, wrapped loosely round the toe. The pain from the free application of the nitrate is very severe for some hours; no inflammatory action, however, arises, and the patient who has been a cripple for weeks, is frequently so much relieved as to be able to walk in a day or two without inconvenience. The lint is to remain undisturbed for two days, when the toe is to be well fomented again, and on the third or fourth day the nitrate is reapplied, unless there should be a good dry coating; it then will be unnecessary. If the surface should be dry, and there is discharge underneath, the nitrate is applied under the excrescence. When a dry coating is procured, I allow it to remain until it comes off with fomentation. After each application of the nitrate, the fomentation is to be omitted for two days.

One of your correspondents, Mr. Lacy, will see that the real principle of the treatment coincides with his, excepting the pressure by the piece of cork, the hyd. nit. oxid., &c. I believe Mr. Lacy will find if he gives a fair trial to the above simple means, the excrescence will diminish and be removed much more rapidly than by applying pieces of cork or any other substance,—the dry coating of the nitrate forming a much more effectual pressure, besides getting rid of an infinite amount of trouble.

I had almost forgotten what has been supposed to be the chief cause of mischief—the nail. This is left to right itself, and is not to be touched; for, in my opinion, the great error in treating and permanently relieving these affections has been in considering this to be the principal obstacle.

[Dr. Kirk, of Glasgow, mentions briefly what happened to himself. He says:]

Several years ago, when a district surgeon, I was much tormented by the nail of the great toe of the right foot growing in, and one night, after a hard day's work, during which it had felt unusually painful, I found a large blister had formed at the root of the nail. The consequence of this was, that the nail exfoliated in a few days, and its successor did not annoy me for a long time afterwards. I intend, if ever it should annoy me as much again, to apply a blister immediately to the root and sides of the nail, and thus get rid, for a time at least, of this very painful and troublesome complaint.

I have often wondered that this plan of removing the nail, by means of a blister, has not been frequently resorted to in such cases, seeing that it ought to be well known to English surgeons, having been mentioned by Sir Astley Cooper in his 'Lectures on Surgery,' under the article 'Warts;' and that it was out of all comparison preferable to the barbarous operation recommended both by Sir Astley and Dupuytren for the cure of this affection.—*Med. Times and Gazette, Aug.* 28, 1852, *p.* 224.

[Mr. Lacy, regarding the mode of tearing away the entire or a portion of the toe-nail as a barbarous operation and not always a successful one, suggests the following plan. He says:]

My opinion is, that the parts ulcerated require the natural pressure that the onychia, or the cutting away of the nail, has removed; and with that view, I treat the parts with accurately and well-adjusted pressure and escharotics. I therefore apply freely the nitrate of silver to the fungus, on which I then put a coating of the nitric oxide of mercury; then, having cut a piece of cork of the shape and size of the nail, so that its concavity shall adapt itself accurately to the convexity of the nail, and taking care that it shall press towards its margin, or root, as the ulceration may require, I bind it firmly on with adhesive plaster. Some cases require lateral pressure only, when I cut the cork shaped like a comma. The first dressing will give pain for a short time, the amount depending on the intensity of inflammation present, and the nicety of the cork's adjustment. The pain, however, soon vanishes, and as the dressing does not require to be repeated but at intervals of two, three, four, or more days, as appearances indicate, the amount of suffering is but trivial.

It is rare that the arg. nitr. has to be applied more than thrice, though it is requisite to well coat the part with the red oxide till it be healed, which, the cork being re-adapted at each dressing, soon happens.

Case 1. 1845. Miss H. had thickening of the great toe-nail, and its edges "grew in." She cut these as much as she could, "down to the quick." Had temporary relief; but the flesh grew more and more over the edge of the nail, and became "raw" (so she expressed it), and very painful. Could not wear a shoe. Consulted a surgeon, who tore away the nail,—"a most painful operation." For a short time she was easier, the nail being "a very long time growing." When it was wholly grown, she found it no better; suffered again the same pain, had the same ulceration, with the nail more uneven and thick than before. Again cut the edge, &c.; when, after being lame two years, she sought my advice.

Appearance.—The nail is unduly thick and uneven, and more convex than if normal. Its outward edge is imbedded in a foul, spongy ulceration, which rises far above the adjoining surface. She represents it as exquisitely painful.

Treatment.—Applied the arg. nitr. freely to the ulcered elevation, and coated it with the precipitate. Adapted a piece of cork, about one-tenth of an inch thick, so as to press upon the elevation, and push it away from the nail; well secured it with emp. adhæs. and a bandage. Complained of pain for half an hour.

Second Dressing, 3rd Day.—The sore very offensive and glairy, but covered with the oxide; it is somewhat reduced in height. Repeat the dressing.

Third Dressing, 7th Day.—The elevation nearly gone; discharge offensive; re-applied the oxide, and re-adapted the cork, so as to press aside the margin of flesh all round the nail. Complained of but little pain, the parts not being half so tender. She was duly dressed three more times, at longer intervals, and was quite well in less than three weeks. Could then wear a shoe, and walk without pain. Has continued well, and is now, seven years afterwards, well.

Case 2, 1845.—A labourer. From onychia, lost part of the nail. An offensive, exuding, elevated, and extremely painful sore followed. Was unable to work. Was under treatment by the Union surgeon some weeks, who proposed extracting the nail, as the means of saving his finger.

Treatment.—Dressed, as in the former case, every fourth day. The pressure destroyed the elevation, and healed the sore. The flesh was kept from growing over the nail, as it formed, and a cure very speedily effected.

Case 3. 1849.—Mr. P., a pupil to a chemist at Brighton, states: "A shutter fell on my great toe, and crushed the nail at the root; lost the nail, then a new one came, which grew one-sided and into my toes, which produced proud flesh. I attribute the wrong growing of the new nail to my want of rest, and wearing boots, which prevented my medical adviser doing much for me; he therefore, ordered me home."

Present Appearance.—The entire toe is red, inflamed, and tumid. A fungus, about the size of a pea, highly painful, projects over the edge of the nail; it is coated with a thin, glairy, offensive secretion. The nail is thin, and has been cut away where the excrescence is.

Treatment.—Applied the nitrate of silver, and then covered it with the precipitate. Adapted a slightly concave, thin piece of cork, so as to press on the crown of the nail, and all round the margin, as well as on the sore. The application gave pain, which lasted an hour or more. On the following day, the patient could walk better. Dressed every other day. The inflammation and swelling very much reduced at the fourth dressing. The bandage is quite slack by the reduction of size. The fungus is not more than half its former size. Fourteenth day, continued the dressing, omitting the arg. nitr., as he now requires only the pressure and the oxide. The former can now be borne without pain. The toe is reduced to its original size. The cork is now comma-shaped, pressing only on the excrescence. Re-dressed from time to time with increased pressure of bandage, the cork being always re-cut. Returned to Brighton after four weeks, before he was quite well, but "soon recovered."

Case 4. 1849.—G. H., destruction of root of nail by a crush, now nine weeks ago. Nail came away seven weeks ago. Has been under treatment since then.

Present State.—The middle right finger greatly swollen, the inflammation extending to the metacarpal bone. The new nail is imbedded in the flesh, which is ulcerated, on both sides very much elevated, and discharging an acrid offensive matter. He looks anxious; he has lost flesh, appetite, and rest, and has irritative fever. He is constantly in pain, and is in low spirits, as amputation has been proposed; and lotions, unguents, poultices, have been used in vain. The bone is supposed to be involved.

Treatment.—Coated the ulcerated surface with red oxide; so cut the cork, as to press only on the spongy elevations sideways, thus uncovering the nail. Applied gentle pressure, with bandage only, having merely fixed the cork with plaister. Persisted in this plan till the sixth day, then applied the argent. nitr., and increased the pressure, so as to keep up lateral bearing, as well as pressure over the surface of the nail.

Seventh Dressing, 18*th Day*.—The finger is much reduced in size; it is not enlarged above the second joint, the elevations are reduced, and healing; and the dressing does not give a fourth the pain, though there is more pressure. The nitrate can be omitted, but the oxide must be still used freely. It forms a drying sort of coat, which, as well as by its stimulation, assists the healing process.

Ninth Dressing, 21*st Day*. —Improving in every respect; nothing but well arranged pressure required. The nail is wholly uncovered; the flesh healed; pain absent. Discharged cured within the month.

Case 5. 1852.—M. P., "when at school, was troubled with ingrowing toe nails—supposed to arise from tight boots. Soaking, scraping, and cutting away the nail adopted for relief. Cannot now wear a boot, the toe is so swollen and inflamed, and there is such a "sore rising." The slightest touch gives pain. The sore is by the side of the nail, growing over it where it is cut away, and it matters." Inspection verifies this.

Treatment as above with caustic and pressure. As the nail is thin, I have cut the cork, so as to press slightly on the crown of the nail, as well as on the flesh. Cured.

I could multiply cases. These examples will, I trust, be sufficient, the more so, as the treatment varies but little. My plan is simply the reverse of that usually practised. Instead of removing the nail out of the way of the flesh, I remove the flesh out of the way of the nail. It matters, perhaps, not how I have found the elastic cork, the adhesive plaister, the combination of the arg. nit., and red oxide most effectual. If the margin around the nail be ulcered, these latter are necessary. If it be not, but only tumefied and tender, I simply apply the nitrate, as I would over any slightly inflamed part, and the cork.

If the nail has been scraped, or is naturally thin, I try to render it less convex at the time I press aside the imbedding flesh. If it be thick, I do not attempt this. I believe the scraping the centre of a thick nail increases its convexity. A thin one is seldom very convex. If pus forms underneath the nail, I make an exit for it, and I prevent the parts underneath sprouting up by using pressure. I never remove a nail torn up by violence (as by machinery) if I can avoid it. If I can so adjust it (*in situ*) as not to become an irritant, I insure, by its uniform pressure on its coming successor, a better formed one.—*Med. Times and Gazette, July* 31, 1852, *p*. 119.

[Mr. Lacy thus records his deductions on this subject after twenty-five years' experience.]

1. If the nail, or any portion of it, be separated from its secreting surface, or cells, the natural defence to the latter is gone, and a sprouting ulcer (pterygium) is produced, which is not readily curable by any plan hitherto recommended for that evil.

2. That when this fungus is produced, it impinges on the adjacent edge of the nail, and being highly sensitive, causes intense pain, inflammation, &c.

3. If on the toe, the weight of the body, when in an erect posture, pressing the flesh upwards, increases the impingement, so does the lateral pressure of a boot or shoe.

4. That the filing away the edge of the nail, the scraping it, the lifting it up with stuffing, the mere application of escharotics, and the use of the scalpel (without it is meant to remove the secreting cells as well as the nail) is bad, and is no improvement on the practice adopted by Aëtius, Celsus, Haly, Abbas, &c. See the Sydenham Society's edition of 'Paulus Ægineta.'

5. That the tearing away the nail, either wholly or in part, but rarely cures; it affords present relief, but if the after-treatment be not such as to keep the pterygium and entire fleshy margin (nail band, as it is called) from encroaching on the surface secreting the new nail, the case of the new nail is often worse than that of the old one. Such cases are types of No. 4, given in your last journal, where the nail was removed by violence,—"torn away," in fact,—and hence my having had several such cases to cure. That the mode of operating was not defective, may be implied from the fact, that in one case (that of a banker at Manchester) the late Mr. Liston was the operator.

6. That poultices, water dressing, and unguents, encourage the growth of these excrescences.

7. That no convex, or thickened nail, should be cut at its lateral edges to prevent its "growing into the flesh," without it is (as some are) detached; when the secreting surface being already so far perished, no injury follows cutting the nail.

8. That the least painful, the readiest, and the surest way to cure, is the reverse of that hitherto adopted; and the natural defence and pressure of the nail should be imitated, not further removed; and that the flesh around the nail should be kept from trespassing on its edges, whilst pressure on the fungus reduces it to a proper level, and restores its healthy functions. It is the practice, in fact, necessary to adopt after the operation of removal, if that operation is to be successful.

9. That the arg. nitr. allays the inflammation; that the hydr. nitr. ox. rubr., not only acts as an escharotic and stimulant, but forms, after two or three applications, a coating which acts as a defence, and, with the pressure, assists the reduction of the ulcered excrescence, as well as the healing process.

10. That it is bad practice to remove this coating, however dirty it may look (from the lead to the empt. adhes.), though the surrounding parts should be wiped clean at each dressing.

11. That cork being flexible, and easily reduced to any required shape, is the cheapest and best substance with which to make gentle and uniform pressure.

12. That, if the "union of the papillary layer of the dermis, with the lamellated structure of the nail;" or, if the nail band be ruptured by an abscess, the nail being intact, an excrescence will frequently follow, but that such is curable by pressure alone.—*Med. Times and Gazette, Aug.* 14, 1852, *p.* 172.

148.—THE COBRA DE CAPELLO POISON.

[Mr. Edward Hickman, formerly of the divisional medical staff, Barrackpore, Calcutta, in a letter to the editor of the 'Lancet' sends the particulars of the following interesting case of which Dr. Mac Rae himself was the subject. The statement is Dr. Mac Rae's own.]

Cure of a Bite of a Cobra de Capello, as tried by Dr. Mac Rae on himself, on the night of the 12*th May*, 1809, *at Chittagong.*—I directed a teaspoonful to be given me of the spiritus ammoniæ compositus in a Madeira glass of water. Finding the first dose agreed with me, in five minutes or less I took a second, and so on, a third, fourth, fifth, and sixth, when the medicine began to have a favourable effect. The first benefit I was sensible of deriving from it was a relief from the sickness at the stomach; my breathing next became easier, my skin to recover its natural warmth, and the perspiration, with which I had been in a manner drenched, dried up by degrees. I still went on with the medicine, but at longer intervals, for every now and then I had a slight return of the oppression in breathing, which was immediately relieved on taking the alkali. I had thus gone on until I had taken thirteen spoonfuls, or a wine-glassful, of the medicine before I considered myself as out of danger; and in proportion as I recovered, I became more and more sensible of the nauseous taste of the alkali, which latterly seemed to burn my throat as I swallowed it, though I could scarcely perceive the taste of the first dose I took, so totally or nearly gone was the nervous sensibility of my palate. In the course of three hours from my receiving the bite I was out of danger."

I can parallel the above with the case of a Sipahee of my own Battalion, (1st Battalion, 23rd Regiment), while stationed at Kissengunge, Bahar, many years afterwards. *Ex uno disce omnes.*

So well aware are the native medical staff, and all intelligent natives, of the efficacy of ammonia in these bites, that they commence with it *on the instant,* not waiting for superior advice. They frequently administer the Eau de Luce.

Dr. Mac Rae was a most intelligent physician of the Honourable East India Company's Service, of large experience and esteem. He proved his case, his servant having struck and killed the cobra.

The truth of the above practice can be testified to by hundreds of gentlemen now in this country.—*Lancet, Oct.* 30, 1852, *p.* 411.

[In a letter to the editor of the 'Lancet,' Dr. J. J. Cole, H.E.I.C.S., of Exmouth, says:]

I add my willing testimony to that of Mr. Hickman, in regard to the efficacy of ammonia in all cases of poisoned wounds, from that of the cobra itself down to the smallest venomous insect. I would almost say that ammonia is an antidote to the venom of the most deadly serpent, provided always time be given for its due administration. The liquor ammoniæ fortior (P. L.), in doses of ten to twenty drops, appears to be the better form. It is not, however, my purpose at present to give the result of practice in poisoned wounds; but I wish to observe that I am by no means certain that to suck a wound inflicted by a cobra would not be dangerous to the sucker. I question whether the gastric juice would neutralize "the deleterious principle of the poison." Mr. Wakley's assurance that he would not hesitate to apply his lips to such a wound points to danger in the act. It also points to his readiness (like many others of our profession) to risk something of his own to save another's life.

It is pretty clear that if the mucous membrane of the sucker's lips and mouth be sound, and he be very careful to spit out the matter drawn, mischief could scarcely accrue. But I apprehend (from what we learn in India) that when the poison reaches the stomach there is the utmost danger to life. Whilst I write, my native servant tells me that persons die who inadvertently swallow the venom of the cobra, and that this happens from eating food or drinking milk of which a cobra had previously partaken. He declares most positively that milk drunk of by the cobra is rendered poisonous to other animals, and relates a curious story, (which he witnessed with a medical officer and some gentlemen of the civil service at Calcutta), of two dogs being killed by drinking milk of which a cobra had before taken a part. The milk was given to the second dog, and he died in the course of an hour, presenting (according to my man's description) very characteristic symptoms of death by the admixture of venom with the blood.

It is not allowed that poison is *ejected* by the serpent whilst feeding; there appears, however, reason to believe that a little at least *exudes.* We know it is so in the case of the scorpion, mosquito, and other little animals of the tropics. The serpent bites in anger and self-defence; the mosquito in order to get at its food; and *both* inflict a poisoned wound, similar, I believe, in character, immeasurably dissimilar in degree, Of the great efficacy of suction to a wound, the mosquito himself teaches us something; for if he be allowed to take his fill, he counteracts by suction the effects of his own poison, and the bite is followed by very trifling *irritation.* If, on the contrary, the little fly be driven off the instant its sting is felt, considerable *inflammation* assuredly follows. This, I take it, accounts for the fact—that persons just arriving in India suffer infinitely more from mosquito-bites than old residents, and not that the blood becomes accustomed to the poison, or that the mosquito prefers a white, fresh skin to a dried-up yellow one.

The "griffin" (a person just arrived in India) is so impatient of mosquito stings, that one within his curtains will keep him employed out the night, and bite him too, to his cost, in a dozen places. The veteran allows him to gorge himself with blood, and scarcely notices in the morning whence he took it; at the same time he finds his bloated friend quietly perched upon the curtain, and wholly at his mercy. These things serve to show that an animal inflicts a poisoned wound whilst seeking its natural food, and that suction immediately applied is the best preventive of mischief. It remains to be proved whether the cobra poisons his food, and whether his venom is noxious to the life of man when taken into the stomach.—*Lancet, Nov.* 13, 1852, *p.* 445.

[Dr. Robert Barnes, in a letter to the editor of the 'Lancet,' confirms the value of *Eau-de-Luce* as an antidote for the serpent-bite. Dr. B. says:]

The late distinguished Lisfranc informed me that his father, who practised in the south of France, witnessed cases of bites from the adder every harvest time, and that his treatment consisted in applying ammonia to the seat of the bite, as well as freely administering it internally. M. Lisfranc spoke in the most unqualified manner of the success of this plan.

It may be said that the poison of the adder is a very different thing from the poison of the cobra de capello; but it would be wrong to assert that the bite of an adder is not a serious and sometimes even a fatal accident; and it is almost certain that if there be a difference in the degree of virulence of the two poisons, there is a close analogy in kind. In the treatment of cases of poisoning, where an animal poison is introduced into the system through a wound, I think it important not to neglect the local application of the remedy. Although the rapidity of the process of absorption soon infects the blood, and thus renders constitutional treatment essential, this circumstance does not supersede the utility of local treatment. Without going into a lengthened discussion, I will suggest that some portion of the poison may remain for a time in the wound, and be taken up into the system by degrees, thus adding to, and keeping up, the aliment of disorder. This portion may be neutrallized or destroyed by the application of ammonia. Again, it is highly probable that some of the ammonia thus applied to the wound may be absorbed too, and may thus chase the poison into the circulation.

When the time for suction—the first remedy—has gone by, the application of ammonia should on no account be omitted.—*Lancet, Nov.* 6, 1852, *p.* 431.

[A correspondent in a letter to the editor of the 'Lancet,' remarks:]

In reference to the unfortunate occurrence that has lately happened at the Zoological Gardens, I may mention the following circumstance that passed under my own personal knowledge, and which, I think, when known, may be of benefit to others, particularly to young men going out to India in the medical line or otherwise. I had seen in a Madras paper a letter from a Bengal surgeon, in which he mentioned that the Ganges, on whose banks his regiment was stationed, had, in consequence of heavy rains, risen and deluged the adjoining land. The snakes had in consequence forsaken their hiding-places, and found their way into the Sepoys' huts. About twenty men were bitten, and brought into hospital, with all the symptoms of suffering from a cobra's bite, apparently beyond hope. The surgeon gave to each hot brandy-and-water, with peppermint and laudanum; and he did not lose a man. At the time I speak of, I was stationed at Bellary, and I was in the habit of keeping greyhounds, one of whom, about nine o'clock at night, was bitten by a snake. The dog gave a cry of terror, and ran off. The night being dark, he was not to be found for some time—a quarter of an hour; he was cold, the limbs quite stiff, the eyes fixed and glassy, and not a pulsation could be found. As the animal was a valuable one, I was anxious to save his life, and had him brought into the house; and remembering the surgeon's success, I lost no time in mixing a comfortable tumbler of brandy-and-water (not to be sneezed at), with the laudanum; the dog's mouth was forced open by straps, and a tablespoonful of the mixture given every ten minutes. For a very long time no change in the animal was perceived, but at length I thought a slight pulsation might be felt, which gave some hope of ultimate success; in short, at about three o'clock in the morning, the dog was able to stagger and be removed. As well as I remember, he must have taken two large tumblers of the mixture.—*Lancet, Nov.* 6, 1852, *p.* 431.

149.—*New Method of Performing Tracheotomy.* By Dr. C. GERSON. —For the performance of tracheotomy, Dr. Gerson has contrived an instrument consisting of three moveable branches, which join at the end, so as to form a sharp point, and can be separated by means of a vice at the other extremity of the cone. By turning the vice from left to right, the branches diverge and form a cone, of which the base is turned towards the wound, and which thus resists the tendency of the cartilages to expel it from the aperture.

In operating, an incision of two or three *centimètres* (fourth-fifths of an inch to one and one-fifth) is made through the skin, the veins are put aside, and the incision, gradually diminishing in length, is continued until the space between two of the cartilaginous rings can be distinctly felt with the nail of the fore-finger. The trachea is then fixed; and the instrument is glided along the nail of the left fore-finger, and is made to penetrate into the space between the rings for about three or four *millimètres* (about one-seventh or one ninth of an inch). An expansion about a quarter of an inch from the point, prevents the instrument from penetrating too deeply. The instrument being held steadily, the handle of the vice is now turned, and the branches of the instrument caused to diverge. When the opening is sufficiently wide to allow the canula to pass between the branches of the instrument, it is introduced into the trachea. The loss of blood is inconsiderable; and the air escapes with so much force, that it would expel every drop which might be inclined to enter the bronchi.—*London Journal of Medicine, Oct.* 1852, *p.* 932.

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